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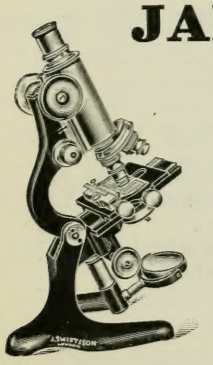

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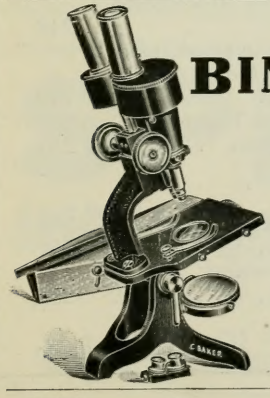

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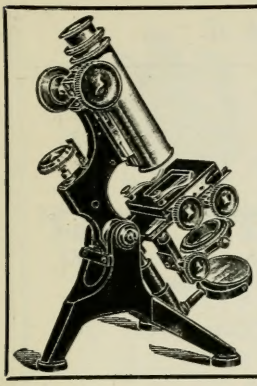

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BUREAU NOTICES.—*continued.*

LISTS OF REFERENCES.

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TROPICAL DISEASES BULLETIN.

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DYSENTERY: A REVIEW OF THE LITERATURE OF THE LAST SIX YEARS.

By P. H. MANSON-BAHR, D.S.O., M.D., M.R.C.P., D.T.M. & H., Cantab.,
Sectional Editor, Tropical Diseases Bureau.

INTRODUCTORY.

In the present review it is proposed to deal with the advances in our knowledge of the two main types of dysentery—the bacillary and the amoebic—during the period of hostilities and since the conclusion of peace.

For many reasons the present is an opportune moment; for it is only during the last few months that the stream of war-literature has slackened sufficiently to enable the reviewer to regard the whole subject in due perspective. It is no easy task that he has had to perform, and he would ask the indulgence of the reader in this attempt at summarizing what is indeed a very extensive and important subject.

Probably never in the world's history has the subject of dysentery attracted such widespread attention as under recent war conditions, nor has it ever before been possible to study the disease by modern methods amid circumstances so favourable.

To the vast majority of medical men on service the subject of dysentery proved to be entirely new. The literature was scattered throughout many journals in a peculiarly inaccessible form, nor could it be maintained that the disease was adequately treated in any modern text-book. Small wonder, therefore, that many of the older ideas upon its etiology were revived and many ancient fallacies repeated, but on the whole workers, more especially those in the British ranks, may be well satisfied with the very material advances achieved, which briefly are as follows:—

The organisms of *epidemic* or *bacillary dysentery* have been studied on a very extensive scale, their specific characteristics and many points regarding their life-history and their transference from man to man are better understood than formerly, and a more accurate idea of the pathology of the successive stages of the disease has been

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obtained. In treatment the value of antiserum has been appraised on an unprecedented scale, and its application and limitations duly estimated. As regards prophylaxis, apart from sanitary measures, a system of preventive inoculation has been worked out and partially put into operation.

In *amoebiasis* a most notable advance has been the accurate morphological differentiation of the various amoebae parasitic in the intestine of man and a more accurate understanding of their life-histories. The question of treatment with the object of attaining a radical cure has proved to be a much more tedious and difficult matter than was formerly thought. Modified ideas of the value of emetine in the treatment of the disease have led to radical alterations in dosage and in methods of administration, and have resulted in the production of a much more powerful combination of the alkaloid with bismuth in emetine-bismuthous-iodide.

Bacillary Dysentery.

1. *Epidemiology.*

Bacillary dysentery broke out as a war disease in almost every European and tropical theatre of hostilities. From German sources we have abundant evidence that it occurred, quite early in the war, in Prussia, as well as upon the Russian and Austrian fronts. Amongst the French forces it apparently simmered during the whole war. But in the British Army it attracted little attention till the autumn of 1916; from that time onwards it assumed quite important proportions, and gradually spreading, reached its maximum in 1918. Flexner's bacillus was responsible for the majority of cases; the death-rate appears to have been a very low one—considerably under 1 per cent.; its main importance lay in the large number of men it crippled.

Bacillary dysentery has long been recognized as occurring amongst the inmates of lunatic asylums in Great Britain and has broken out sporadically from time to time. In the autumn of 1917 Buchanan recorded an outbreak due to Shiga's bacillus amongst a body of workmen in England.

In the Dardanelles there appears to be little doubt now that the majority of casualties have to be ascribed to bacillary dysentery, although in the earlier part of this hazardous adventure there appears to have been, owing to lack of proper facilities, considerable divergence of opinion as to the correct diagnosis. In Salonika, Egypt and Palestine, bacillary dysentery was much in evidence, especially during the autumn months (October–November). The absence of this infection during the cooler winter and the hot summer months was generally noted. In semitropical countries epidemics of bacillary dysentery recur in definite seasonal waves. In Mesopotamia Ledingham records that, as noted elsewhere, bacillary dysentery affected most commonly the front-line troops, and accounted for the great majority of "clinical dysenteries," and that, although the proportion of amoebic infections to the total stood higher than in other war zones, *B. dysenteriae* was responsible for 80 per cent. of the infections amongst British troops. In East Africa the occurrence of bacillary dysentery amongst the troops was recorded by Pirie; here, too, Shiga's bacillus was responsible for the most virulent cases.

The case mortality-rate is difficult to compute; it was probably greater in the Dardanelles than elsewhere, but even at that period it is estimated at not exceeding 5 per cent.*

2. *Bacteriology.*

The scientific classification of the dysentery bacilli has undergone revision. There has been an attempt to reduce the number of types and strains by disregarding variations in bio-chemical reactions, and to rely more upon serological tests for systematic classification and identification.

Shiga's bacillus is generally recognized as the most typical organism, which apparently in all circumstances remains true to type. This bacillus was recognized as being responsible for the most severe and fulminating types of dysentery on all fronts. There is little doubt that in toxicity it exceeds the mannite-fermenting groups. It has been abundantly confirmed as the cause of dysentery by all known criteria. It has been found, by DOLD in China, to occur as a natural infection in dogs.

A motile bacillus resembling Shiga's in its sugar reactions, but forming indol, has been credited by SCHMITZ with the causation of dysentery. It is not agglutinated by Shiga-immune serum, but is clumped by MICHAELIS' acid agglutination test. This investigator claims that a graduated series of solutions of acetic acid with caustic soda, forming ascending hydrogen-ion concentrations, will agglutinate certain bacilli. The true Shiga's and Flexner-Y bacilli are not clumped in this fashion, but aberrant organisms—the so-called para- or pseudo-dysentery bacilli, to which SCHMITZ's organism belongs—apparently are. ANDREWES has described a similar organism as the *Bacillus ambiguus*, and in Salonika DUDGEON recognized paradysentery bacilli of two kinds, dubbed + and —, which apparently belong to the same category. The etiological importance of these bacilli can at best be considered doubtful.

The Flexner bacillus and the Y-strain of Hiss and Russell apparently belong to a single species. As in the case of Shiga's bacillus the evidence of its etiological significance is complete.

A large number of strains of *mannite-fermenting* organisms having been included as being closely allied to Flexner's bacillus, ANDREWES and INMAN have attempted to co-ordinate them on a serological basis.

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* REFERENCES.

Dysentery in Germany.—MATTHES (M.), vol. 7, p. 212; SEIFFERT (G.) & NIEDIECK (O.), vol. 8, p. 130; MAYERHOFER (E.) & VON REUSS (A.), vol. 12, p. 16; ASCOLI (A.), vol. 12, p. 299.

In France.—LOYGUE (G.) & HAGUENAU (J.), vol. 11, p. 55; LANCELIN (R.) & RIDEAU (I.), vol. 12, p. 14; FLORAND, BEZANÇON & PARAF, vol. 12, p. 13.

In Russia.—MEYER (F.), vol. 9, p. 190; KOCH (J.), vol. 9, p. 437.

In Gallipoli.—ARCHIBALD (R. G.), HADFIELD (G.), LOGAN (W.) & CAMPBELL (W.), vol. 8, p. 378.

In England.—BUCHANAN (G. S.), vol. 12, p. 295.

In Salonica.—DUDGEON (L.), vol. 15, p. 194.

In Egypt and Palestine.—MANSON-BAHR (P.), vol. 16, p. 10.

In East Africa.—PIRIE (J. H. H.), vol. 9, p. 426.

In Mesopotamia.—LEDINGHAM (J. C. G.), vol. 17, p. 31.

N.B.—All references are to the summaries in this *Bulletin* unless otherwise stated.

From their work it appears that five definite strains may be recognized, termed V, W, X, Y, Z, for the recognition of which they have prepared five homologous sera. Their object has been to provide a pooled serum of these five components for the laboratory identification of Flexner's bacillus.

Certain *lactose-fermenting* strains have been connected with dysentery. Certain cultures of Flexner-Y organisms have been found to ferment lactose and to produce dysenteric lesions when injected into rabbits. In these organisms the lactose-fermenting properties are permanent, and it is possible that further investigations of this problem will show that the lactose employed in these tests may have been of doubtful purity.

The *atypical* or *inagglutinable* dysentery strains may be dismissed from consideration.

Several observers have recorded the isolation of the dysentery bacillus from the blood by culture during life or from the solid organs after death. Ghon and Roman, and Flu record blood-culture of *B. dysenteriae* "Y" in two cases with typhoidal symptoms; in Ledingham and Penfold's case the organism was Shiga's bacillus. Dudgeon in Salonika isolated Flexner's bacillus from the blood of two acute dysentery cases, but in 143 similar instances the result was negative.

In the preparation of efficient antiserums, both for curative purposes and for agglutination, Nicolle and his co-workers have recorded that, for the production of the former, extracts of the bacilli are more satisfactory, while for the latter the bacilli themselves should be used.

According to Bujwid the serum of normal horses will agglutinate both the Shiga and the Flexner bacillus in fairly high dilutions (1 : 200). Flexner states that, owing to the great demand for antisera, he found it more advantageous to discard the old-established method of subcutaneous injections into the horse and to substitute repeated intravenous injections for short periods with intervals of rest, and by this means he was able to produce a serum of high protective value in about ten weeks.*

3. *Pathology.*

Singularly little has been written upon the pathological aspects of this extremely variable disease.

Bahr has noted that death may occur within 56 hours from the onset of symptoms, and that in these cases the appearance of the cadaver

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* References.

Occurrence of bacillus in dogs.—Dold (H.), vol. 9, p. 435; Dold (H.) & Fischer (W.), vol. 17, p. 174.

Occurrence of bacillus in blood.—Ghon (A.) & Roman (B.), vol. 6, p. 457; Ledingham (J. C. G.) & Penfold (W. J.), vol. 7, p. 228; Flu (P. C.), vol. 9, p. 434; Dudgeon (L. S.), vol. 15, p. 194.

Biochemical reactions.—Martin (C. J.) & Williams (F. E.), vol. 10, p. 143; Michaelis (L.), vol. 11, p. 263.

General.—Andrewes (F. W.), vol 12, p. 16, and vol. 16, p. 14; Andrewes (F. W.) & Inman (A. C.), vol. 16, p. 14; Schmitz (K. E. F.), vol. 12, p. 306; Murray (E. G. D.), vol. 13, p. 229; Mackie (T. J.), vol. 14, p. 99; Dudgeon (L. S.), vol. 15, p. 194; Hirschbruch & Thiem (H.), vol. 14, p. 107.

Preparation of antiserum.—Bujwid (O.), vol. 7, p. 218; Nicolle (M.), Debains (E.) & Loiseau (G.), vol. 8, p. 446; Flexner (S.), vol. 8, p. 453.

may suggest an intense toxaemia. A general lymphoid peritonitis may be present, with oedema of the mesentery. The lower part of the ileum, as well as the whole of the large gut, may be intensely engorged; the mesenteric glands enlarged and diffluent. In these cases, too, the spleen is dark red and pulpy. When the disease is fully developed the mucous membrane of the large gut and exceptionally—in one case—the whole of the small intestine, undergo *colliquative necrosis*. In cases in which life is prolonged beyond this stage the necrotic tissue is desquamated and repair of the gut takes place by formation of granulation tissue. In a bowel which has undergone such extensive destruction it is doubtful whether the mucosa can be completely regenerated.

Opportunities of observing the chronic stages of bacillary infection have been extensive. Ragged ulcers form in the large bowel. The individual lesions vary considerably in size, rarely penetrate the *muscularis mucosae*, and consequently perforation of the peritoneum seldom takes place. In these chronic conditions the bacillus may be isolated with considerable difficulty by cultural methods from the bases of the ulcers.

Bahr has noted that mucous retention cysts, which may attain quite noticeable proportions, may arise as the direct sequel of chronic bacillary dysentery. Their formation is possibly due to pseudo-adenomata springing from the fundi of Lieberkühn's glands. A polypoid condition of the mucous surface may also be another direct sequel; the polyps themselves, outgrowths of varying length, being composed of very vascular granulation tissue.

As regards the histopathology of bacillary dysentery, Bahr and Willmore have found that the macrophage cells which constitute such a striking feature of the cellular exudate in the stools are produced by proliferation of the capillary endothelium of the submucosal vessels.*

4. *Symptomatology.*

The general symptoms of bacillary dysentery present infinite variation; it is now recognized that all degrees of severity of infection may occur. It may manifest itself as a diarrhoea of a few days' duration, and the abdominal symptoms may be hardly noticeable; these mild cases are generally due to Flexner-Y bacilli. On the other hand, choleraic cases leading to a fatal result in two or three days have been noted, and may possibly lead to confusion with true Asiatic cholera. The fulminating cases are sufficiently characteristic, but in the milder types it is practically impossible, on clinical data alone, to differentiate between bacillary and amoebic infections. An intermittent pyrexia may accompany the initial stages, and the toxaemia may at first sight actually suggest an enteric infection. The stools, which are numerous and small in quantity, are formed of gelatinous and viscous blood-stained mucus. It has been remarked that these characteristics, added to their inoffensive nature, serve to distinguish them from the stools of the amoebic disease.

The *complications* of bacillary dysentery have received widespread attention: of these dysenteric *arthritis* is the most striking and severe. The knee is most commonly affected, though the implication of other

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* References.

Bahr (P.) & Willmore (J. G.), vol. 13, p. 243; Manson-Bahr (P.), vol. 16, p. 10.

joints, such as the ankle, hip, metacarpophalangeal, metatarsal, and temporo-maxillary have been noted. Arthritis generally supervenes during convalescence, or rather when the more acute dysenteric symptoms have subsided. The effusion into the joint cavity takes place suddenly and is accompanied by pyrexia, though there is no evidence to show that the damage to the articulation may be permanent. The synovial fluid in these cases is straw-coloured and, generally speaking, sterile on culture. It is recorded by DUDGEON that in one instance Shiga's bacillus was isolated by ELWORTHY. According to KLEIN this fluid possesses considerable power of agglutinating the homologous dysentery organism, the titre of agglutination being equal to that of the blood-serum of the case at the same time.

Iridocyclitis may supervene in association with arthritis or as an independent condition during convalescence. It is apparently only found in Shiga infections.

A specific *dysenteric conjunctivitis* has been noted on the western front by COSSE and DELORD, as well as by GRAHAM in Malta. It supervenes about the tenth day of the illness onwards.

Chronic bacillary dysentery patients, STRASBURGER notes, are generally extraordinarily pallid and cachectic; sometimes they are oedematous; this cachexia may be ascribed to chronic absorption of dysenteric toxins.*

5. *Diagnosis.*

The rapid diagnosis of bacillary dysentery is a very important subject from a military and therapeutic standpoint, and has naturally attracted much attention.

WILLMORE and SHEARMAN have emphasized a point never before sufficiently realized, that a rapid and correct diagnosis may be made in the *early stages* of the disease by a simple microscopic examination of the stool and a study of the cellular exudate. The characteristics of the bacillary stool are the abundance of polymorphonuclear leucocytes with large ring-like nuclei; these preponderate over the mononuclears, and form fully 90 per cent. of the cells of the exudate.

The presence of large hyaline macrophage cells, which constitute about 2 per cent. of the white cells in the stool, has led to considerable confusion, as they are capable of ingesting leucocytes and red blood cells, and thus bear a very close resemblance to *Entamoeba histolytica*. In diameter these macrophages measure 20μ to 30μ; they may be oval, round, or even bilobed in shape. It is thought that they are derived from the capillary endothelium of the gut-wall.

A diagnosis based upon the isolation of the bacillus from the stools is by far the most satisfactory method; this depends to a great extent upon observing niceties of technique. In the first instance the stool must be freshly passed, for even a few hour's delay in a warm climate

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* REFERENCES.

Symptoms:—General.—JACOB (L.), vol. 10, p. 139; RYLE (J.), vol 14, p. 100; STRASBURGER (J.), vol. 18, p. 42.

Complications.—RIST (S.), vol. 9, p. 441; CROUZON (O.), vol. 9, p. 441; MOREAU (L.), vol. 9, p. 442; KLEIN (B. G.), vol. 15, p. 202; MANSON-BAHR (P.), vol. 17, p. 16; GRAHAM (G.), *Proc. Roy. Soc. Med.* (Sect. of Med.), 1919, pp. 23–42; COSSE & DELORD, vol. 13, p. 235.

may prejudice the chances of culture of this delicate organism (WHITEHEAD and KIRKPATRICK; MARTIN and WILLIAMS). The chances of successful isolation are much more favourable during the earlier stages of the disease; thus the latter observers have shown that out of 1,050 attempts to recover dysentery bacilli at various periods of the disease, 68 per cent. of positive results were obtained in the first five days, 17·4 per cent, in the second five days, and 6·3 per cent. in the third five days.

DUDGEON and his co-workers in Salonika have shown that organisms of the dysentery group are sensitive to the presence of free acid, while they are able to grow freely in an alkaline medium. An equal quantity of 3 per cent. normal soda should therefore be added to a dysentery stool when it is necessary to send the specimen some distance to the laboratory; under these conditions the bacillus may be isolated even after a delay of twelve hours. A method of preserving faeces for delayed examination has also been introduced by TEAGUE and CLURMAN (Medical Research Council. Special Report Series, No. 51) by emulsifying with double volume of 30 per cent. glycerine in 0·6 per cent. saline. This procedure prevents the dysentery bacilli from being overgrown by coliform organisms.

As regards the medium most suitable for the growth of dysentery bacilli, considerable diversity of opinion would seem to exist. The majority prefer the original MACCONKEY medium, though others find the addition of the inhibitory sodium taurocholate to be unnecessary, and obtain better results with plain litmus-lactose agar. LEVINE, working in the laboratories of the American Expeditionary Force, has evolved a medium in which china-blue rosolic acid is used as an indicator. The composition of the medium is as follows:—

Distilled water	1,000 cc.
Agar	15 gm.
Peptone	10 gm.
Dipotassium sulphate	4 gm.

To each 100 cc. of the melted medium is added before use:—

Lactose 20 per cent. solution	5 cc.
Glucose 5 per cent. solution	1 cc.
Rosolic acid (1 per cent. in 90 per cent. alcohol).	1 cc.
China-blue (0·5 per cent. in water)	1 cc.

The recognition of the dysentery colonies on the plate can be rapidly confirmed by macroscopic agglutination, for which a suitable polyvalent serum embracing the five serological types of Flexner-Y, together with a Shiga serum, should be employed. If tubes are used it is recommended that the time allowed should be at least four hours at 55° C., but the reaction will not be complete till ten hours later. The addition of 0·1 per cent. formalin to a broth culture minimizes both spontaneous and group agglutination. If very rapid confirmation is desired, macroscopic agglutination readily takes place on the glass slab of Garrow's agglutinometer. For complete diagnosis the organism should be planted out in four sugar media, viz., glucose, lactose, mannite and dulcite.

Sero-diagnosis.—This method has its limitations, but it is useful, especially in convalescent cases. The technique recommended by DREYER, both on account of its greater sensitiveness and because of

the standardization, gives the most reliable results. In the case of Shiga dysentery it may be said that these results have been consistent, but in the case of Flexner-Y they have been less encouraging, probably owing to the existence of five serological races of this bacillus. Much has been made by RITCHIE and others of the tendency of certain normal sera to agglutinate the dysentery bacillus; possibly this tendency has been over-estimated. In Shiga infections a positive diagnosis should be established by an agglutination of 1 : 25, in Flexner-Y dysentery it would not be advisable to consider this rather low dilution a certain indication. In summing up the true value of sero-diagnosis in dysentery one should note that negative tests are of little value; on the other hand, if agglutination occurs, the possibility of a previous attack of bacillary dysentery or of inoculation against this disease should be duly weighed.*

6. *Treatment.*

The serum-treatment of bacillary dysentery has received a great impetus. Success would seem to depend to a great extent upon the period of administration and upon the dose. Authorities on this subject have utilized injections of 60–80 cc. or even larger quantities in acute cases. The earlier the injection is made the more gratifying the result; according to KLEIN, the injection of serum after the 7th day of illness has little or no beneficial effect.

The serum generally employed has been a multivalent one, though it has been suggested that it would become more efficacious if it were possible to increase the potency of Shiga antibodies. In cases of great urgency the serum should be given intravenously in doses up to 80 cc.; if given intramuscularly or subcutaneously, larger amounts may be employed. WALLER mentions the injection of 140 cc. of serum subcutaneously in three doses at eight-hourly intervals during the first 24 hours. In cases which do not improve after the first injection a second and similar amount may be given after the lapse of a day or so.

In 56 per cent. of serum-treated cases *serum sickness* develops, and in 12·4 per cent. of these cases it is complicated further by a serum arthritis supervening on the tenth day after injection. The intramuscular route is especially advantageous in that a large amount of serum can be injected so as to excite the minimum amount of pain.

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* REFERENCES.

Diagnosis :—General.—SELIGMANN (E.), vol. 8, p. 120; WILLMORE (J. G.) & SHEARMAN (C. H.), vol. 12, p. 311.

Isolation of bacillus from stools.—WHITEHEAD (H.) & KIRKPATRICK (J.), vol. 12, p. 302; MARTIN (C. J.) & WILLIAMS (F. E.), vol. 12, p. 303; MEDICAL RESEARCH COUNCIL (Special Report Series), No. 51; and vol. 16, pp. 475–479; MEDICAL RESEARCH COMMITTEE (Special Report Series), No. 40; vol. 15, pp. 194–198; KLIGLER (I. J.) & OLITSKY (P. K.), vol. 13, p. 231; SCHUERER (J.) & WOLFF (C.), vol. 13, p. 232; LEVINE (M.), vol. 17, p. 24.

Sero-diagnosis.—RITCHIE (T. R.), vol. 8, p. 125; JACOBITZ, vol. 8, p. 448; SCHIEMANN (O.), vol. 9, p. 189; FRASER (H.), vol. 9, p. 191; RAVAUT (P.), vol. 9, p. 429; MARTIN (C. J.), HARTLEY (P.) & WILLIAMS (F. E.), vol. 12, p. 303; FLU (P. C.), vol. 12, p. 304; LOYGUE (G.), BONNET (H.) & PEYRE (E.), vol. 14, p. 108.

Serum-therapy should be combined with the routine use of saline aperients and a carefully regulated diet. Various brands of anti-dysenteric serum have been utilized in different European countries. In British practice the serum produced by the Lister Institute appears to have afforded the best results.

As a means of checking the diarrhoea and at the same time of absorbing the dysentery toxins in the alimentary canal *bolus alba*, or a mixture of animal charcoal and kaolin in equal parts, has come much into vogue, especially in Germany and Austria; this powder should be given suspended in water in doses of three teaspoonfuls every few hours.

German workers have been utilizing the combined vaccine and serum treatment, with inconclusive results. SCHELENZ begins with 0·3 cc. of Boehncke's Dysbacta,* followed by 0·5 cc. on the fourth and fifth days.

The vaccine treatment alone is more applicable to the chronic forms; the vaccine most usually employed consists of *B. Shiga* and *B. Flexner* in equal proportions, sterilized by the addition of 0·4 per cent. carbolic. KAUNTZE in East Africa has injected very considerable doses, commencing with 3,000 million bacteria and repeating every fourth day. More generally much smaller doses are considered advisable. At present it may be stated that the vaccine treatment of chronic bacillary dysentery, whether the vaccines are sensitized or not, has proved to be unsatisfactory.

In intractable cases surgical treatment, either by appendicostomy or right inguinal colotomy, would appear to hold out the best hope of success.†

7. *Prophylaxis.*

Prophylactic Inoculation.—Excessive reaction produced by injection of killed cultures of dysentery bacilli has militated against their general prophylactic employment. PRATT-JOHNSON and MILNE first endeavoured to overcome this difficulty by sensitizing their emulsions with polyvalent dysentery serum. DEAN and ADAMSON appear to have attempted a similar method by the addition of equal parts of eusol, 1 : 1,000, to an emulsion containing 200 million Shiga bacilli.

In 1917 Graeme GIBSON published a new method of preparation of a vaccine against bacillary dysentery. Dead cultures of the organism are mingled with its homologous antiserum immediately before injection, the resulting suspension being known as a *sero-vaccine*. The addition of the serum minimizes to a great extent the reaction on subcutaneous injection. It was found that if untreated anti-dysenteric serum

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* For composition of this substance see under Prophylaxis.

† REFERENCES.

Antiserum treatment.—ROSE (C. W.), vol. 8, p. 452; MEYER (F.), vol. 9, p. 190; FINLAYSON (G. A.), vol. 9, p. 431; WALLER (W. E.), vol. 15, p. 201; KLEIN (B. G.), vol. 15, p. 202.

Bolus alba.—DU MONT, vol. 7, p. 235; IZAR (G.), vol. 9, p. 192.

Vaccine treatment.—MARGOLIS (A.), vol. 11, p. 60; ROSS (P. H.) & KAUNTZE (W. H.), vol. 11, p. 60; BOEHNCKE, vol. 13, p. 237; GROSS, vol. 13, p. 237; SCHITTENHELM, vol. 13, p. 238; SCHELENZ, vol. 13, p. 238; BOEHNCKE & ELKELES, vol. 13, p. 240; RATHERY (F.), RANQUE & RAUX, vol. 14, p. 106; KAUNTZE (W. H.), vol. 17, p. 23.

was utilized, the immunity conferred, as judged by the production of antibodies in the blood, was negligible. Attempts were therefore made to remove the antibacterial portion of the serum whilst leaving the antitoxic portion intact. The vaccine and serum are mixed in the syringe; two doses are given, separated by an interval of seven days, the first dose consisting of 0·25 cc. of vaccine together with the same amount of serum, the second of 0·5 cc. of both vaccine and serum.

The duration of immunity conferred by this method is uncertain and, although a large number of troops were injected during the war, there are no collected figures to show its efficacy or otherwise.

A composite vaccine prepared by Boehncke and known as *Dysbacta* was extolled both as a prophylactic and therapeutic agent in both the German and Austrian armies. In its preparation a 0·5 per cent. carbolized mixture is made, comprising dysentery bacilli in the widest sense (*i.e.*, including both true and so-called pseudo-dysentery strains) together with dysentery toxin and antitoxin (Dys–bac–ta). The prophylactic inoculation consists of three doses of 0·5 cc., 1·0 cc. and 1·5 cc. respectively at five-day intervals; general and local reactions are slight. By the use of this *dysbacta* it is claimed that the spread of dysentery was arrested both amongst the troops and civil population, whilst the production of agglutinins in the blood of those inoculated is considered to prove that immunity has been conferred.

Besredka's experiments show that rabbits and mice can be permanently immunized against dysentery organisms by the administration of dysentery vaccines by the *mouth*; he claims that dysentery antibodies are elaborated in the mucosa of the large gut. No record of any trials having been made upon the human subject has yet appeared.

Bacillary Dysentery Carriers.—That individuals infected with the dysentery bacillus alone constitute the reservoir of infection is now generally accepted. It has therefore become necessary to investigate the carrier state. The main types of carrier can be recognized: (*a*) The *healthy carrier*—one who has never suffered from the disease—is apparently extremely rare (Fletcher & Mackinnon). (*b*) The *convalescent carrier* is the main source of danger to the community. In such an individual the condition may be temporary or chronic. Thus the aforementioned observers have recorded that out of a group of 935 dysentery convalescents 6·95 per cent. were carriers of dysentery bacilli, and of these 2·78 per cent. were persistent carriers. The greater proportion, however, are carriers of Flexner-Y bacilli; the true Shiga carriers are in the minority: the latter group, however, are singularly persistent and are generally in a debilitated state of health.

According to Perry, dysentery bacilli may be excreted continuously over a period of one year; the reviewer has seen one case in which Shiga's bacillus was recovered three years after the initial bacillary dysentery attack.

That the prevention of bacillary dysentery depends largely on measures directed against the housefly has been accepted on all hands. Smits records the isolation of Shiga's bacillus from flies caught in dysentery barracks. Taylor, working under Dudgeon in Salonika, found that the housefly is capable of excreting both Shiga and Flexner organisms for as long as 48 hours. Manson-Bahr succeeded in isolating Shiga's bacillus in fair numbers from the intestines of "wild flies"

in Palestine; the insects were trapped in the open desert far from human habitation. He is of the opinion that under natural conditions the housefly is capable of harbouring in its intestinal tract dysentery bacilli for some considerable period.*

The continuation (Amoebic Dysentery) will appear in the next number.

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* References.

Preventive inoculation.—Pratt-Johnson (J.) & Milne (A. J.), vol. 7, p. 219; Dean (H. R.) & Adamson (R. S.), vol. 8, p. 124; Seiffert (G.) & Niedieck (O.), vol. 8, p. 130; Loewy (O.), vol. 8, p. 453; Gibson (H. G.), vol. 11, p. 59; Boehncke, vol. 12, p. 20; Olitsky (P. K.), vol. 12, p. 308; Bischoff (H.), vol. 14, p. 112; Besredka (A.), vol. 13, p. 242; vol. 17, p. 25.

Carriers of *B. dysenteriae*.—Verzár (F.) & Weszeczky (O.), vol. 8, p. 121; Fletcher (W.), vol. 12, p. 18; Medical Research Committee [Fletcher (W.) & Mackinnon (D. L.)] (Special Report Series), vol. 14, p. 330; Perry (H. M. J.), Private communication, and in Byam & Archibald's "Practice of Medicine in the Tropics."

Carriage of *B. dysenteriae* by flies.—Smits (J.), vol. 6, p. 475; Dudgeon (L. S.), vol. 15, p. 194; Manson-Bahr (P.), vol. 16, p. 10.

KALA AZAR.

NICOLLE (Charles). **Chronique du Kala-Azar en Tunisie.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1921. Mar. Vol. 1. No. 1. pp. 33–39.

This paper contains a summary of the observations on kala azar in Tunis since the discovery of the first case there by CATHOIRE in 1906. Spleen puncture has been performed in 172 cases which showed symptoms like those of kala azar, but leishmania were discovered in only 59. Of these, 46 were either Italian or directly connected with Italians. This is explained by the fact that persons of this nationality live in closer association with dogs than the French, Maltese or other inhabitants. It also serves to prove that the disease was introduced by Italians.

Children under five months' old have not been found infected. Most cases occur between the ages of one and three years, while the disease is rare in those above this age. The oldest child with kala azar was nine years of age.

The distribution of the disease in Tunisia is shown by the following records of cases for these districts: Tunis, 42; Bizerte, 8; Béjà, 2; Kef, 5.

Kala azar in dogs, a disease which is considered to be identical with that of children, is more commonly met with.

Some interesting figures are given with regard to the culture of leishmania and allied flagellates on NNN medium. Three strains of leishmania from cases of kala azar have been maintained for 291, 241 and 59 subcultures. The first strain was isolated over ten years before the date of writing. Two strains from dogs have passed through 241 and 230 subcultures. Similarly, three strains of the parasite of oriental sore have been kept for 280, 28 and 26 subcultures. Three strains of the leptomonas cultivated from the blood of geckos have reached their 84th subculture and two others the 30th, while the trypanosome of the toad has been maintained for 89 subcultures.

The cases of anaemia with enlarged spleen in children, in which leishmania cannot be demonstrated, appear to be due to a distinct disease. It is most commonly seen amongst the Jews. The many investigations conducted with a view to discovering the etiology of this disease have yielded only negative results.

C. M. Wenyon.

KLIPPEL & MONIER-VINARD. **Un cas de kala-azar d'origine marocaine.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1921. 3rd Series. Vol. 45. July 14. No. 24. pp. 1037–1038.

Kala azar in human beings has not hitherto been described from Morocco, and the authors record the first case from this locality in a young girl.

C. M. W.

GATT (T. E. H.). **A Case of Splenic Anaemia in a Child due to *Leishmania infantum*.**—*Jl. Roy. Army Med. Corps.* 1921. Aug. Vol. 37. No. 2. pp. 142–143.

A record of a fatal case of kala azar in a child of three years of age. The disease was contracted in Malta, where the child was born.

C. M. W.

Carnot (P.) & Libert (E.). **Un cas de kala-azar, d'origine macédonienne, survenu chez un adulte et observé à Paris.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1921. July 14. 3rd Series. Vol. 45. No. 24. pp. 1039–1046. With 1 chart in text.

The authors describe in detail the history of a man who contracted kala azar during the war in Macedonia. The nature of his illness was not suspected till two and a half years had elapsed. Puncture of the spleen revealed the characteristic parasites. The patient died in spite of injections of tartar emetic, to which, however, he reacted very badly on account of his much reduced condition.

C. M. W.

Mazzoni (L.). **Ricerche ematologiche in bambini leishmaniotici dopo l'iniezione di adrenalina.**—*Pediatria.* 1921. Apr. 15. Vol. 29. No. 8. pp. 347–359.

With a view to facilitating the diagnosis of infantile kala azar by blood examination, the author investigated the effect of adrenalin administration on the presence of leishmania in the peripheral circulation. In all, twenty-six cases were studied and the following conclusions were arrived at:—

1. In blood taken half an hour after an injection of adrenalin the parasites are present in greater numbers than they were before. The increase, however, is hardly sufficient to justify this procedure as a means of diagnosis.

2. The injection is followed by a leucocytosis, which in some rare cases results in the number of cells being doubled.

3. The leucocytosis is only transitory, for it has disappeared in an hour, and is followed by a leucopenia.

C. M. W.

Brahmachari (U. N.). **The Treatment of Kala-Azar with some New Antimonial Preparations.**—*Jl. Trop. Med. & Hyg.* 1921. Aug. 15. Vol. 24. No. 16. pp. 213–215.

Attention is drawn to a number of new antimonyl compounds, some of which the author has tried in the treatment of kala azar.

Urea-antimonyl tartrate was used intravenously in four cases. The dose given was 2–6 cc. of a 2 per cent. solution. The duration of the observation is given for only one of the four cases. It extended over four months. Fever had ceased to occur, the blood picture showed improvement, while the spleen was much reduced in size. In three of the cases it is stated that *L. donovani* disappeared from the spleen. No information is given about the disappearance of parasites in the fourth case.

It is concluded that the action of urea-antimonyl tartrate is not superior to that of sodium or potassium antimonyl tartrate, though the vomiting, cough and rise of temperature associated with the use of the latter drugs appear to be absent. The compound was used intramuscularly in two cases. The dose was 1–2 gr. daily in one case and ½–1 gr. in the second. In the first case no parasites could be found in the spleen after 20 injections, and in the second case after 16 injections. The general improvement was similar to that occurring in the cases treated intravenously. In both cases the local reactions were less severe than after intramuscular use of potassium antimonyl tartrate.

Ammonium antimonyl tartrate has been used intramuscularly in one case. The dose employed was 1–2 cc. of a 2 per cent. solution. Fever ceased after three injections, but it is too early to report on the final result. The salt is much less irritating than ammonium potassium antimonyl tartrate.

Three other compounds have been prepared: (1) Phenyl-stibinic acid and its sodium and ammonium salts; (2) P-amino-phenyl-stibinic acid and its sodium salt; (3) Acetyl-amino-phenyl-stibinic acid and its sodium salt.

The salts of phenyl-stibinic acid are too irritating to be used therapeutically. "Stibenyl," which is allied to No. 3, has been used in two cases of kala azar—in one intramuscularly and in the other intravenously. Intravenously the dose varied from 0·1–0·8 gm., and the same dose was given intramuscularly. In the latter case there was much local irritation, and in both eruptions appeared on the body. In the case treated intravenously parasites disappeared from the spleen.

P-amino-phenyl-stibinate of sodium, for which the name "Stibamine" is proposed, has been used intramuscularly in one case in doses up to 0·3 gm.

Attention is drawn to the increase in the leucocyte-count following the intravenous injection of narcotine, an increase which does not seem to be merely a temporary phenomenon. A compound of narcotine and antimony tartrate has been prepared.

In summing up the results of his observations, the author states that, as the best antimonial preparation for the treatment of kala azar has yet to be discovered, one must not rest contented with the use of tartar emetic or antimonyl sodium tartrate.

C. M. W.

i. Manson-Bahr (Philip). ii. Allen & Hanburys, Ltd. **Intravenous Injection of Stibenyl in Kala-Azar.** [Correspondence.]—*Lancet.* 1921. May 7 & 21. p. 991; p. 1102.

i. In this letter Manson-Bahr points out that he has been informed that in India severe and alarming symptoms have followed the use of organic antimony compounds in the treatment of kala azar, though he himself had remarkably good results in one case. In a more recent case of his the administration of 0·4 gm. produced vomiting and diarrhoea. He still believes that the acetyl-*p*-amino-phenyl salt of antimony holds out better prospects for the treatment of kala azar than the potassium or sodium tartrates, and he would advocate a further trial, commencing with smaller doses of 0·05 and 0·1 gm.

ii. Messrs. Allen & Hanburys, from whom the preparation referred to above came, write to state that before issue it is tested by the Medical Research Council and that the drug issued by them conforms with the standard of the Medical Research Council.

C. M. W.

Thomson (J. Gordon) & Sinton (J. A.). *Leishmania donovani*, **in Cultures, recovered from Spleen during Life and from the Bone Marrow of the Cadaver.**—*Proc. Roy. Soc. Med.* (Sect. of Trop. Diseases & Parasit.). 1921. June. Vol. 14. No. 8. pp. 21–23.

The note under review draws attention to the fact that leishmania may remain alive in the organs some time after death. From the bone marrow successful cultures of *Leishmania donovani* were obtained

at the autopsy of a case of kala azar fourteen hours after death. The patient had been treated with tartar emetic, so it is evident the drug had failed to kill the parasites. Cultures of *L. tropica* were also obtained from a case of oriental sore which was undergoing tartar emetic treatment. [KNOWLES has shown in India that cultures of *L. donovani* can be obtained from the spleens of cases of kala azar which ultimately recover, even after they have received 174 cgm. of the drug, this *Bulletin*, Vol. 17, p. 353.]

C. M. W.

BACQUÉ (B.) **À propos d'un cas de bouton d'Orient observé dans le pays des dunes (Oued Souf, Sahara Constantinois).**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1921. Mar. Vol. 1. No. 1. pp. 82–84. With 1 fig.

The author records a case of oriental sore which was apparently contracted at the oasis of Souf, which is separated from all other habitable districts by a barrier of sand 100 kilometres in breadth. LEGRAIN (1896) considered that the disease did not occur in such localities, but the observations made on the case here mentioned and the fact that the characteristic scars occur on the faces of the Souf inhabitants lead the author to the conclusion that LEGRAIN's statement is not correct. At Souf flies are abundant all the year round; mosquitoes occur in winter and spring, but in small numbers. They disappear entirely in summer. Phlebotomus, however, is prevalent. The author expresses no opinion as to which of these is responsible for the carriage of oriental sore.

C. M. W.

RAVAUT (Paul). **Deux cas de Leishmaniose cutanée contractée en Espagne et en France. Premier cas de contagion en France.**—*Ann. de Dermat. et de Syph.* 1921. 6 Sér. Vol. 2. No. 1. pp. 29–37. With 2 figs.

This paper gives further details of the two cases of oriental sore previously reported by the author from Spain and France (see this *Bulletin*, Vol. 16, p. 457).

C. M. W.

RISIQUE CEBRIAN (R.) & VARGAS PESADO (A. Martinez). [**Un cas de leishmaniose tropicale à Barcelone.**]—*Estudios Médicos de Murcia.* 1920. June. Analysé dans *Gac. Méd. Catalana.* 1920. July 15. Vol. 57. No. 1033. p. 7. [Summarized in *Bull. Office Internat. d'Hyg. Publique.* 1921. June. Vol. 13. No. 6. pp. 637–638.]

This note records a case of oriental sore at Barcelona. A dog was inoculated (method not stated) and an autopsy was performed 45 days later. Leishmania was demonstrated in the spleen.

C. M. W.

DUCKWORTH (G. F.). **Oriental Sore.** [Practical Notes.]—*Practitioner.* 1921. May. Vol. 106. No. 5. (No. 635.) p. 377.

The note describes a treatment which the writer found very efficacious in Mesopotamia. After removal of the scab from the

sore a piece of lint the exact size of the ulcer is soaked in a solution of urotropine (one-drachm to the ounce of distilled water) and then applied as a dressing. The application is made twice daily and is continued until healing has taken place.

C. M. W.

Sinton (J. A.). **Notes on Oriental Sore in Russian Turkestan and the Results of Treatment with Injections of Tartar Emetic Solution.**—*Ann. Trop. Med. & Parasit.* 1921. July 16. Vol. 15. No. 2. pp. 107–112.

The paper describes six cases of oriental sore which were successfully treated with intravenous injections of tartar emetic (2 per cent. in normal saline solution). All the six cases recovered in 8 to 21 days after the commencement of the treatment. The total amount of the drug, given in two to four injections, varied from 10 to 28 cgm. The disease in Turkestan seemed to respond more readily to tartar emetic than that of Mesopotamia.

C. M. W.

Treston (M. L.). **Some Notes on Oriental Sores.**—*Lancet.* 1921. Aug. 6. p. 270.

As a result of experience gained in Mesopotamia the writer advocates the following lines of treatment for oriental sore :—(*a*) For sores in the early stages, X-ray applications and crystals of potassium permanganate ; (*b*) for fairly advanced sores, crystals of potassium permanganate and intravenous tartar emetic ; (*c*) for sores in the advanced stages, thorough scraping under chloroform and application of ol. ricini dressings ; (*d*) for sores on the face, other than those in a very early stage, intravenous tartar emetic.

C. M. W.

i. McDonagh (J. E. R.). Some Remarks on the Development of the Leishman-Donovan Bodies.—*Proc. Roy. Soc. Med.* (Sect. of Dermat.). 1921. Apr. Vol. 14. No. 6. pp. 55–58. With 1 fig. (Discussion. p. 59.) Also: *Brit. Jl. Dermat. & Syph.* 1921. May. Vol. 33. No. 5. (No. 391.) pp. 182–188. With 4 figs.

The subject matter of these papers is that of an earlier one by the same author, which was noted in this *Bulletin*, Vol. 17, p. 360. The present communications are accompanied by illustrations, which only confirm the comments made in the previous review.

C. M. W.

i. Patrick (Adam). A Case of Multiple Oriental Sores (Leishmaniasis) Treated by Intravenous Injections of Antimony.—*Trans. Roy. Med.-Chirurg. Soc. Glasgow.* 1921. Vol. 14. p. 96.

ii. Gastou & Pontoizeau. Deux cas de Leishmanioses (Bouton de Biskra).—*Bull. Soc. française de Dermat. et de Syph.* 1921. No. 1. pp. 19–21.

iii. Lombardo (C.). Di un caso di bottone di oriente osservato in Sardegna.—*Giorn. Italiano d. Malat. Ven. e d. Pelle.* 1921. Vol. 62. (56th Year.) No. 1. pp. 5–14. With 1 plate.

iv. Spencer (Robert D.). A Case of Oriental Sore (of Italian origin) encountered in the United States.—*Jl. Amer. Med. Assoc.* 1921. May 28. Vol. 76. No. 22. pp. 1494–1495. With 3 text figs.

These papers describe typical cases of oriental sore.

C. M. W.

RELAPSING FEVER.

Cragg (F. W.). **A Note on Relapsing Fever in India, with Special Reference to its Seasonal Prevalence.**— *Indian Jl. Med. Res.* (Special Indian Science Congress Number, 1920.) pp. 22–28.

The object of this communication is to draw attention to the seasonal incidence of relapsing fever as it occurs in the United Provinces. The disease is widespread in India and, as is the case in most countries, it is usually a winter disease and is carried by lice, which attain their maximum development at this season. In the United Provinces, however, relapsing fever occurs in the hottest time of the year—in March, April, and May. The total number of cases in these outbreaks is not large and might be accounted for by the importation of lice on the bodies of recruits, who harbour these creatures in small numbers during the summer months. The author, however, is not entirely satisfied with this explanation and points out that Brown, who investigated similar outbreaks, thought that possibly a pentatomid bug, *Bragada picta*, might be the vector. As several distinct clinical types of relapsing fever have been described in India, it is possible that this summer variety differs from the classical winter form in being conveyed by some agent other than the louse, in spite of the fact that the causative organism cannot be differentiated.

C. M. Wenyon.

Sinton (J. A.). **Relapsing Fever at Meshed, North-East Persia.**— *Indian Med. Gaz.* 1921. July. Vol. 56. No. 7. pp. 241–250. With 11 charts in text.

In view of the fact that a form of relapsing fever supposed to be conveyed by ticks has been described by Harold and Wright from certain parts of Persia, the writer wishes to draw attention to an outbreak which he observed at Meshed in the Khorasan Province. The paper is mostly confirmatory of an earlier one by Fry [see this *Bulletin*, Vol. 16, p. 167]. In the outbreak now recorded the writer concludes that lice were the agents of transmission and states that ticks could not be found.

C. M. W.

i. Kennedy (J. C.). **Some Observations on the Pathology of Relapsing Fever.** — *Trans. Roy. Soc. Trop. Med. & Hyg.* 1921. Feb. 18. Vol. 14. No. 6. pp. 99–104. With 1 fig. in text. (Discussion. pp. 104–107.)

ii. ——. **Parasites (? Developmental Stages of *Spirochaeta recurrentis*) in the Liver of a Fatal Case of Mesopotamia Relapsing Fever.** [Correspondence.]—*Jl. Roy. Army Med. Corps.* 1921. Sept. Vol. 37. No. 3. p. 238. With 2 text-figs.

iii. Willcox (W. H.). **The Pathology of Relapsing Fever.** [Correspondence.]—*Lancet.* 1921. Mar. 26. p. 666.

i. The paper read before the Royal Society of Tropical Medicine and Hygiene gives a further account of the histological changes noted by the author in the liver of a case of relapsing fever. A previous paper on the same subject was reviewed in this *Bulletin*, Vol. 17, pp. 375–6.

ii. In his letter to the editor the author points out that he now believes that the bodies described are probably not of protozoal nature. They seem to be phases in the degeneration of polynuclear leucocytes, which takes place in such a way as to cause each lobe of the nucleus to be reduced to a perfectly clear area, at the centre of which is a substance which takes the stain.

iii. In the *Lancet* report of the discussion of KENNEDY'S paper at the Royal Society of Tropical Medicine and Hygiene, Willcox's statement that in Mesopotamia the mortality-rate of relapsing fever amongst Arabs was 1 per cent., while it was 8 per cent. amongst the Indians, was misquoted, the figures being reversed. This error Willcox here corrects.

C. M. W.

i. CAWADIAS (Alex.). **Le syndrome hémorragique de la fièvre récurrente.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1921. July 21. No. 25. pp. 1105–1107.

ii. ——. **Le syndrome méningo-encéphalique au cours de la fièvre récurrente.**—*Ibid.* pp. 1107–1110.

These papers draw attention to two syndromes which occur in cases of relapsing fever.

i. In one there is a tendency to haemorrhage. Its commonest manifestation is an epistaxis, which is usually an indication of a heavy infection. It may occur at the commencement of the illness or at a later stage, but is characterized by its violence, the patient being literally bathed in blood. It is difficult to arrest, persists for a long time, and may reduce the patient to a condition of semi-syncope. Epistaxis occurred in 60 per cent. of the cases observed. On two occasions the haemorrhagic syndrome revealed itself in the form of haematuria. In both these cases spirochaetes were discovered in the blood.

ii. The second syndrome is described as being of the meningo-encephalitic type. In a mild degree it shows itself in the severe headache and backache which is a recognized feature of the disease. The patients are in a condition of profound prostration. The eyeball becomes very sensitive to pressure, while the tendon reflexes are exaggerated. In about 3 per cent. of cases, however, the condition is so marked that a mistaken diagnosis is easily made. The condition commences as just described, but the symptoms soon assume the characters of those of cerebro-spinal meningitis with marked opisthotonos and definite Kernig's sign. The patient ceases to notice his surroundings and does not react even to violent stimulations. Sometimes there is a mild form of delirium. Lumbar puncture shows a slightly increased tension. Microscopic examination of the fluid shows a few red cells and lymphocytes, but, in spite of very careful search, no spirochaetes.

C. M. W

NITZESCU (J. J.). **Le liquide céphalorachidien dans la fièvre récurrente.** —*C. R. Soc. Biol.* 1921. May 28. Vol. 84. No. 19. pp. 1037–1038.

During an epidemic of relapsing fever numerous microscopic examinations of the cerebro-spinal fluid were made. In no case were

spirochaetes demonstrated, in spite of the fact that in four patients the symptoms were of such a nature that they were sent to hospital as cases of cerebro-spinal fever. As a further test of the presence of spirochaetes the cerebro-spinal fluid from eight cases was injected subcutaneously into healthy subjects. Of these, five became infected, a result which confirmed the original statement of Combiescu that spirochaetes were present in the fluid. They evidently occur only in small numbers and do not produce any change in the cellular constituents.

C. M. W.

Saceghem (René). **Le pétrole dans le traitement de la fièvre récurrente et de la trypanosomiase.**—*C. R. Soc. Biol.* 1921. June 4. Vol. 85. No. 20. pp. 11–12.

The object of the note is to draw attention to a treatment of relapsing fever which is used in Ruanda in Central Africa. A large spoonful of petroleum is taken each morning and evening for four days. The author states, without giving any details of what he means, that the cures are numerous amongst the natives.

C. M. W.

Delanoë (P.). **De la spirochétose des Gallinacés dans le Cercle des Doukkala.**—*Bull. Soc. Path. Exot.* 1921. June 8. Vol. 14. No. 6. pp. 316–320.

A record of the occurrence of spirochaetosis of fowls in Morocco. As elsewhere, the agent of transmission is *Argas persicus*.

C. M. W.

i. Robert (Léopold). **Sur onze cas de bronchite sanglante (maladie de Castellani) à association fuso-spirillaire de Vincent.**—*C.R. Soc. Biol.* 1921. July 2. Vol. 85. No. 24. pp. 230–232.

ii. ——. **Sur le rôle de l'association à fuso-spirochètes de Vincent dans l'étiologie de la bronchite sanglante de Castellani.**—*Ibid.* July 9. No. 25. pp. 285–286.

In eleven cases of spirochaetal bronchitis the writer has noted the presence of fusiform bacilli as well as spirochaetes. He insists on the necessity of making repeated examinations for tubercle bacilli, even in those cases in which the fusiform bacilli and spirochaetes are plentiful, as the two conditions may be associated. He believes, with some justification, that the fusiform bacilli and spirochaetes are identical with those associated with Vincent's angina, and concludes that *Spirochaeta bronchialis* of Castellani and Fantham is the same organism as *Spirochaeta vincenti* of Blanchard, from which they cannot be distinguished.

C. M. W.

Bloedorn (W. A.) & Houghton (J. E.). **Bronchial Spirochaetosis.**—*Jl. Amer. Med. Assoc.* 1921. June 4. Vol. 76. No. 23. pp. 1559–1563. With 4 charts in text.

This paper draws attention to the existence of bronchial spirochaetosis in the United States, a disease which is probably more widespread than is generally recognized. As has been so frequently noted, the resemblance to pulmonary tuberculosis is emphasized.

A routine examination for spirochaetes of all sputa is advocated, and their presence should be regarded as significant, unless proved otherwise. The disease is capable of transmission to uninfected persons, though the degree of contagiousness is not great. An individual harbouring the spirochaetes may present little or no evidence of the disease, so that it appears that there exist carriers of *Spirochaeta bronchialis*. The disease as a rule responds readily to treatment and of the arsenical preparations, arsphenamine or neo-arsphenamine is very efficacious. [As it is admitted that carriers exist it is difficult to understand the remark "their presence should be regarded as significant, unless proved otherwise." Presumably the cases in which the spirochaetes are of no significance are the carrier cases, which should be of great significance from the point of view of spread of the disease. The evidence seems to be accumulating that the spirochaetes in the sputum are really oral spirochaetes, which have found a suitable medium in the bronchi, and the paper by Robert reviewed in this number bears this out, as also one by Mühlens (this *Bulletin*, Vol. 16, p. 462), who states that spirochaetal bronchitis as a distinct disease does not exist.]

C. M. W.

Korthof (G.). **Spirochaetosis bronchialis.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1921. Vol. 61. No. 1. pp. 71–78. With 1 plate.

The author draws attention to the frequency of spirochaetal bronchitis in the Dutch East Indies. After reviewing the history of our knowledge of the disease since the first case was recorded by Castellani in 1906, he quotes six cases, one of which showed the clinical symptoms described by Castellani. One case was complicated by tuberculosis, while the others were of a mild nature. For staining the spirochaetes the author advocates the method of Becker [this *Bulletin*, Vol. 16, pp. 188–189] :—

1. Fix the smear during one minute in formaline 10 per cent., acetic acid 5 per cent.
2. Heat the slip while covered with 10 per cent. tannine solution.
3. Stain with carbolfuchsine.

The spirochaete will then show a brilliant red colour.

W. J. Bais.

Levaditi (C.), Marie (A.) & Isaïcu. **Recherches sur la spirochétose spontanée du lapin.**—*C.R. Soc. Biol.* 1921. June 11. Vol. 85. No. 21. pp. 51–54.

The paper gives a description of *Spirochaeta cuniculi* (Jakobsthal), an organism which closely resembles *Treponema pallidum* and which produces genital and nasal lesions in the rabbit. Three rabbits with a natural infection were studied.

C. M. W.

Pringault (E.). **Présence de spirochètes chez** *Phlebotomus perniciosus*, **Newstead.**—*C.R. Soc. Biol.* 1921. Jan. 29. Vol. 84. No. 4. pp. 209–210.

The author in the course of an unsuccessful search in the Phlebotomus of Marseilles for the *Herpetomonas phlebotomi*, found by Wenyon in Aleppo and by Mackie in Madras, discovered numerous Spirilla in

the gut of a specimen of *Phlebotomus perniciosus*. The forms seen are described and are provisionally named *Spirochaeta phlebotomi*. They measured on an average 10–14μ in length by 0·2–0·25μ in thickness.

A. Alcock.

Hoffmann (Erich). **Die Bedeutung des Dunkelfelds für die Untersuchung der Gelbfieber-, Syphilis- und anderer Spirochäten sowie sonstiger Mikroorganismen und kleinster Gebilde in gefärbten Ausstrichen und Schnitten [Leuchtbildmethode].**—*Berlin Klin. Woch.* 1921. Jan. 24. Vol. 58. No. 4. pp. 73–75. With 2 figs.

The paper draws attention to the value of the dark field in the study of spirochaetes and other organisms in stained films and sections. It was demonstrated that spirochaetes and the more difficult leptospira are readily seen in smears stained by silver nitrate, Giemsa or carbol fuchsin, and that all the finer details of structure can be detected. The reviewer is under the impression that some years ago Leishman drew attention to the fact that spirochaetes could be studied by the dark field method in stained films.

C. M. W.

Laveran (A.) & Franchini (G.). **Spirochétose de punaises des euphorbes et du latex.**—*Bull. Soc. Path. Exot.* 1921. Apr. 13. Vol. 14. No. 4. pp. 205–207. With 2 text figs.

The authors have noted the presence of spirochaetes in the latex of euphorbia, which, under certain conditions, is known to harbour a flagellate of the leptomonas type. The latter has been found to be carried from plant to plant by Lygeid bugs. Both in the latex of the plants and in the intestine of the bugs spirochaetes have been discovered and the writers are of opinion that in addition to the flagellate condition one must admit a spirochaetosis of the euphorbias which is carried by the same bugs.

C. M. W.

YELLOW FEVER.

i. Guiteras (Juan). [In Spanish and English.] **Expedicion al Africa y estudios de fiebre amarilla. Conferencia pronunciada en la Academia de ciencias de la Habana el 14 de Febrero de 1921. - Observations on Yellow Fever, in a Recent Visit to Africa. Lecture delivered before the Academy of Medicine of Havana on February 14, 1921.**—Reprinted from *Sanidad y Beneficencia.* 1921. Jan. Feb. Mar. Vol. 25. Nos. 1, 2 and 3. pp. 21–43.

ii. ——. **Expedicion al Africa y estudios de fiebre amarilla.**—*Rev. Med. y Cirug. Habana.* 1921. Mar. 10. Vol. 26. No. 5. [Summarized in *Bull. Inst. Pasteur.* 1921. June 15. Vol. 19. No. 11. p. 401.]

These papers give an account of the work of the Commission which was to have investigated yellow fever under the direction of the late Surgeon-General Gorgas, who was prevented from undertaking the work on account of the fatal illness to which he succumbed in London on his way out to West Africa.

The writer, under whom the Commission proceeded to West Africa, could discover no cases of yellow fever and the Commission were struck by the absence of the extreme heat and numerous mosquitoes which characterize yellow fever localities in South America. It appeared that yellow fever had a very precarious footing in West Africa and it was possible that it had already disappeared. The last epidemic occurred in 1910–12.

The writer expresses his views on the organism which Noguchi has isolated from cases of yellow fever and which he supposes to be the causative agent of the disease. For the following reasons Guiteras doubts if there is any etiological connection between Noguchi's *Leptospira icteroides* and yellow fever:—

1. If animals were as susceptible to yellow fever as they are to the leptospira, then the disease would occur as an epizootic amongst animals during yellow fever outbreaks.

2. If animals were susceptible one would not be able to eradicate the disease as easily as it is now possible to do it.

3. Noguchi has only been successful in cultivating the organism from a small percentage of the cases of yellow fever from which attempts were made.

4. He has obtained cultures from the blood after the third day of the disease, by which time, as shown by the American Commission, the blood is no longer infective to man.

5. Noguchi's organism is with difficulty transmitted to animals by Stegomyia.

6. The lesions produced by the injection of the organism differ from those of yellow fever.

7. Dr. Lebredo was unable to transmit the virus to guinea-pigs from 25 cases of yellow fever in Yucatan and five cases in Havana.

C. M. Wenyon.

Cohn (Alfred E.) & Noguchi (Hideyo). **Etiology of Yellow Fever. XIII. Behaviour of the Heart in the Experimental Infection of Guinea Pigs and Monkeys with** *Leptospira icteroides* **and** *Leptospira ictero-haemorrhagiae.*— *Jl. Experim. Med.* 1921. June 1. Vol. 33. No. 6. pp. 683–692. With 4 charts in text and 2 plates.

The authors begin their paper by pointing out that a slowing of the heart beat is regarded as a pathognomonic sign in the early stages of yellow fever (Faget's sign). With a view to obtaining an explanation of this phenomenon, the changes produced in the heart rhythm of animals inoculated with *Leptospira icteroides* were investigated.

The following conclusions were reached :—

1. Slowing of the heart occurred in monkeys and guinea-pigs during the febrile period of the experimental infection due to *Leptospira icteroides*. A similar reaction took place in animals inoculated with *Leptospira ictero-haemorrhagiae*.

2. The mechanism of slowing was usually due to slowing of the whole heart.

3. Once, incomplete heart block was seen. Changes in the ventricular complex occurred four times.

C. M. W.

Noguchi (Hideyo). **Prophylaxis and Serum Therapy of Yellow Fever.** —*Jl. Amer. Med. Assoc.* 1921. July 16. Vol. 77. No. 3. pp. 181–185. With 5 charts in text.

After a brief résumé of his investigations into the etiology of yellow fever, the writer gives an account of the action of the immune serum of horses in cases of yellow fever in man. At the time of writing he had records of 170 cases of the disease which had been treated by various medical men by the serum method. Of cases treated before the third day of the disease there were 95, of which 82 recovered, while of those treated after the third day there were 75, of which 36 recovered. This gives a mortality of 13·6 per cent. in the first group and 52 per cent. in the second. The normal mortality-rate for yellow fever in the various localities in which the serum treatment has been adopted varied from 51 to 100 per cent.

Vaccination by injection of killed cultures was tried on a large scale in various endemic centres. An analysis of the results is shown in a series of tables. In Guayaquil it was estimated that in a total population of 80,000 there were 4,000 non-immunes. Of these, 427 were vaccinated in 1918 and 1919. The incidence of yellow fever amongst the vaccinated was 11 per 1,000, and amongst the unvaccinated 110 per 1,000. In Salvador in ten infected localities there were 113,000 inhabitants. Of these, 3,607 were vaccinated. The incidence of undoubted yellow fever amongst them from May to December, 1920, was nil, whilst the unvaccinated supplied 181 cases. Similar results were obtained in Guatemala and Tuxpan in Mexico.

The writer concludes that anti-icteroides serum reduces the mortality from yellow fever when used on or before the third day, but has little effect when given after the third day. Prophylactic vaccination with 2 cc. of killed cultures containing at least 2,000,000,000 organisms per

cubic centimetre is of definite protective value. Amongst 3,230 persons who received two doses of vaccine no cases of yellow fever occurred, while 278 cases occurred amongst the unvaccinated. Amongst 4,307 persons receiving a single dose there were only five suspicious cases. The protection does not become evident till ten days after the injections.

C. M. W.

Malagueta (I.). **Contribuçâio ao estudo da epidemiologia de Pernambuco.**— *Arch. Brasileiros de Med.* 1920. Mar. Vol. 10. No. 3. pp. 141–157.

An account of an epidemic of yellow fever at Caruaru in Pernambuco during February and March, 1918.

C. M. W.

YAWS.

VAN NITSEN (R.). **Les manifestations tertiaires du Pian dans la région du Tanganika-Moëro.**—*Ann. Soc. Belge de Med. Trop.* Brussels. 1920. Nov. Vol 1. No. 1. pp. 39–54. With 1 folding plate containing 8 illustrations and 1 map.

Of 699 yaws patients seen by the author in the region west of Lake Tanganyika, he found tertiary lesions in the majority; 459 were closely studied, and the table sums up the findings. The various manifestations are described. The tertiary period thus takes chiefly the form of ulceration, by preference on the trunk and limbs, where the course is serpiginous. When the nose, fingers, toes, penis, lips and soft palate are attacked the mutilation may be serious, and in the extreme cases the condition is that of gangosa. Articular and bone lesions are often present as well. The tertiary period begins either towards the end of the secondary, or 10, 15, or 25 years later. It is met with at any age, in one instance at a year and a half. At one place 22 per cent. of 700 patients presented tertiary lesions. The author gives several reasons for attributing these lesions to yaws, and states that the natives distinguish them from syphilis, which is rare.

A number of cases are given in some detail:—

TERTIARY LESIONS IN 459 YAWS PATIENTS.

1. Skin Lesions	1. Purulent Ulcers	279		
	2. Crusted Ulcers	124	Developing superficially on the trunk and limbs	
	3. Fissures	13	Going deep	Nose, Soft palate, Lips 29; Penis 5; Fingers 27
2. Lesions of the Mucosa		30		
3. Joint Lesions	1. Pains	178		
	2. Arthritis		With effusion 5; Dry, causing deformity 69	
4. Bone Lesions	1. Severe pains	72		
	2. Osteitis and Periostitis		Hypertrophy 42; Exostoses 12; Dactylitis 23	
	3. Necrosis	27		
	4. Rarefaction and Resorption of Bone	3		

A. G. B.

NOEL (P.). **Pian des muqueuses.**—*Ann. de Dermat. et de Syph.* 1921. 6 Ser. Vol. 2. No. 2. pp. 72–81.

The author, an army surgeon in the Cameroons, finds that the lesions of the mucosa in yaws are neglected in the literature when their existence is not explicitly denied. Almost alone CASTELLANI has given some description of them. Noel has studied 100 cases in the Cameroons. Seven of the patients were under one year, 39 between one and 15, 51 between 16 and 30. Apart from the genital and anal regions, the secondary lesions of yaws were found on the mucosa of the mouth (22), nose (19) and conjunctiva (4). They usually date from the first three months. The lesions are carefully described. The diagnosis is based on their aspect, colour, papillomatous appearance, the softness of the base, the benignity, and the ready and complete cure, and is always facilitated by the coexistence of skin lesions.

A. G. B.

KURITA (T.). **Ueber einen Fall von Framboesia tropica, combiniert mit Lichen pilaris aehnlichem Ausschlage.**— *Japan. Ztschr. f. Dermat. u. Urol.* 1920. Oct. Vol. 20. No. 10. pp. 884–886. [In Japanese. German Autoreferat, p. 77.]

According to the German "Autoreferat," the author, during a stay on Truck Island in the East Caroline Archipelago, saw many cases of yaws. The case here described was one in which a hyperkeratosis resembling Lichen pilaris and affecting the whole body appeared on faintly leucodermic spots.

A. G. B.

SCHAMBERG (Jay Frank) & KLAUDER (Joseph Victor). **A Study of a Case of Yaws (Framboesia tropica) contracted by an American Soldier in France.**— *Arch. Dermat. & Syph.* 1921. Jan. Vol. 3. No. 1. pp. 49–75. With 13 text-figs. Also shorter note in *Amer. Jl. Trop. Med.* 1921. Jan. Vol. 1. No. 1. pp. 49–51.

This study by two American professors of dermatology and syphilology is well illustrated and is fairly exhaustive. The patient joined the Royal Canadian Army as a cavalryman in 1917, and reached France in July, where he remained till August, 1919. Most of this time was spent at Etappes [? Étaples]. He did not meet dark-skinned soldiers except in the streets or in saloons and Y.M.C.A. huts, and never slept in the same barracks. Arrived in England from France he went into hospital at Aldershot with rheumatoid pains in the knees and shoulders, at times sufficiently severe to incapacitate him. He had fever, 104–105° F., for 3–4 days. He was in hospital one month and had no skin manifestation. He left hospital in September and landed at Halifax in October. About a week after his return to Philadelphia he noticed "pimples" on his palms and a week later lesions on the scalp and soles.

On admission to hospital, December 30, 1919, there was a generalized adenopathy and a crusted eruption on the palms, soles, scalp, forearms, throat and penis. This is described in detail. "On the left forefinger, and scattered elsewhere on the palmar aspects of the fingers, were pinhead-sized and large-sized conical, papular reddish spots, with central horny plugs. As the central plugs fell out they left a depressed central pit." This condition, it is noted, has been described by CASTELLANI. The serum obtained from the surface of the skin lesions showed spirochaetes with the morphologic appearance of *S. pallida*. Blood-culture was negative. Intramuscular injection into rabbits with an emulsion from one of the lesions was positive and the strain has been carried through four transfers. In a nodule which was removed from the arm for study, the intracellular spaces were infiltrated with polymorphonuclear leucocytes, and in one area a distinct miliary abscess was visible on a level with the summits of the papillae; in this abscess seven or eight spirochaetes were seen in the Levaditi stained sections.

The table illustrates the effect of treatment on the Wassermann reaction. After the first injection many of the lesions disappeared, and after a second the remainder became completely resolved, but the reaction was slow to become negative.

WASSERMANN REACTION.

Date.	Cholesterolized.	Antigens. Alcoholic Syphilitic Liver.	Acetone Insoluble Lipoids.
Jan. 2, 1920	+ + + +	+ + + +	+ + + +
Jan. 9, 1920	+ + + +	+ + + +	+ + + +
Jan. 16, 1920 ..	+ + + +	+ + + +	+ + + +
Jan. 22, 1920* ..	+ + + +	+ + + +	+ + + +
Feb. 1, 1920	+ + + +	+ + + +	+ + + +
Feb. 5, 1920*	Test	not performed.	
Feb. 13, 1920	+ + + +	+ + + +	+ + + +
Feb. 22, 1920	+ + + +	+ + + +	+ + + +
Feb. 26, 1920	+ + + +	+ + +	+ + + +
March 4, 1920 ..	+ + +	+ +	+ + +
March 19, 1920 ..	+ + +	+ +	+ +
April 2, 1920	+ + +	+ +	+ +
April 9, 1920	+ + +	+ +	+ +
April 14, 1920* ..	Test	not performed.	
April 19, 1920 ..	+ + +	+ +	+ +
July 8, 1920	+	Neg.	Neg.

* 0·9 gm. neo-arsphenamin given intravenously.

The parasitology is discussed at length with special reference to syphilis. The spirochaete was found most difficult to stain ; the best results were obtained with the anilin black stain of ROSENBERGER and FANZ. In the discussion, LINDENBERG, of São Paulo, Brazil, attached great importance to the fact that in yaws the spirochaete is found in the connective tissue and in syphilis not. The finding of the organisms in the miliary abscesses he considers specific for yaws.

A. G. B.

MAUL (Herman G.). **Bone and Joint Lesions of Yaws with X-Ray Findings in Twenty Cases.**—*Philippine Jl. Sci.* 1918. Mar. Vol. 13. No. 2. pp. 63–77. With 7 plates.

The author writes :—

" In the majority of cases the lesions show as rarefied areas, irregularly oval or elliptical in shape with the long axis parallel to that of the bone in which the lesions are located. The size varies from the smallest discernible area to one that is two or three centimeters in length. The rarefication presents moderately well-defined borders separating it from the unaffected bone and varies in translucency from the slightest differentiation of unnatural transparency to one simulating a perforation. Most of the lesions appear to originate in the interior of the bone, while a number can be seen as small excavations on its outer surface. When the lesion is on the surface of the bone, the periosteum is usually destroyed, but occasionally the cortex shows thickening, and the periosteum is separated from the bone. . . .

" In the chronic lesions marked irregularity of the bony outline is evident, and the picture characteristic of the earlier lesions is more or less lost. The bone as a whole becomes deformed, and the growth of the bone is interfered with both in length and breadth. This dwarf-like picture is most frequently noticed in the cases showing the lesions in the epiphyses. Within the joints the destruction is most frequently seen on the parts of the articular surfaces most exposed to trauma, as oval or irregularly shaped excavations, making the outline of the articular surface rough and uneven."

The X-ray picture differs from that of syphilis in that (1) the periosteal proliferation is absent; and (2) the thickening of the cortex of the bone is absent [exceptions are noted].

The shaft of the bone is the most frequent location of the lesion—80 per cent. of cases; the epiphyses or articular surfaces are affected in 20 per cent. Of bones the tibia was most frequently affected, and other bones in the following order of frequency: tarsal bones, fibula, phalanges, metatarsals, metacarpals and radius, patella and humerus, femur and ulna, etc. The lesions were multiple in 75 per cent. of the cases. The time between the appearance of the primary lesion and bone lesions varied from six months to nine years, with an average of $2\frac{8}{10}$ years. The cases were observed for five months after treatment, and radiographs were taken at monthly intervals. The clinical and subjective symptoms vanished long before the radiographs showed the bone lesions to have disappeared. The histories of several cases are given.

The conclusions are as follows:—

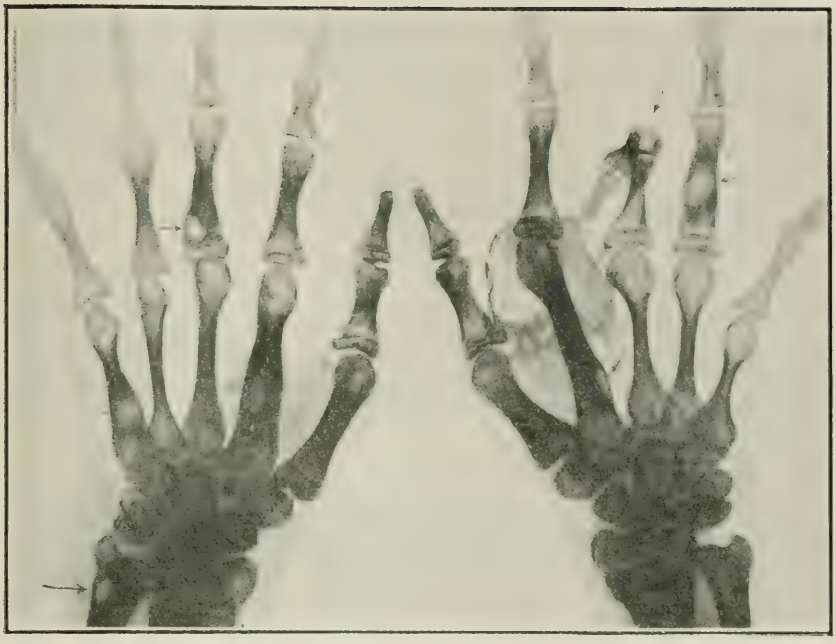
"1. The majority of cases of yaws with bone and joint involvement shows characteristic X-ray lesions.

"2. The radiograph can be used as an additional means of differentiating yaws from syphilis, when there is involvement of the bone, and as a confirmation of the evidence that the two diseases are distinct.

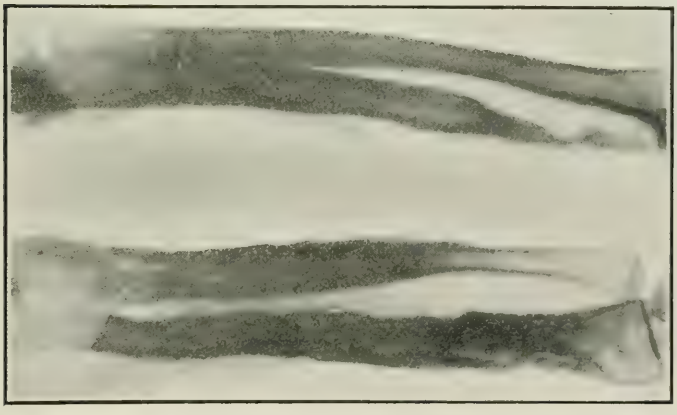
"3. The pains complained of in the joints are due, in most part, to the presence of the lesions on the articular surfaces.

"4. Twenty per cent. of patients infected with yaws develop bone or joint lesions when not treated.

Pl. ii. Fig. 1. Shows characteristic joint lesions on the articular surface of the bone involved. [*Case* 1. Filipino, 8 years old: primary lesion in infancy: X-ray pictures showed 19 bone lesions. Considerable regeneration followed Castellani treatment.]



Pl. iii. Fig. 1. Shows contracture on flexure surface of second finger of right hand. Multiple bone lesions. Large cutaneous lesion and thickening of soft tissues on the palmar surface of index finger of right hand. [*Case* 3. Filipino, 15 years old: primary lesion 1911: severe pains in all joints 6 months later, persisting for 4 years. During this period soft tissues of middle finger of hand became contracted. X-ray survey of the bones in 1917 revealed 52 bone lesions. After 0·4 gm. salvarsan relief of symptoms "marvellous," and regeneration of lesions was eventually complete.]



Pl. vii. Fig. 3. Shows chronic bone lesions of yaws with deformity. Case from Drs. FERNANDEZ and ARGÜELLES.

[The figures are reproduced from *Philippine Journal of Science,* Vol. 13 B. No. 2.]

" 5. Regeneration of the bone is complete at the site of the lesion, if the destruction has not been too great.

" 6. The Castellani treatment causes a gradual disappearance of the bone and joint lesions.

" 7. Salvarsan is a specific in these cases, and rapid regeneration of bone follows its use."

A. G. B.

SCHMITTER (Ferdinand). **The Aetiology of Gangosa and its Relation to Papulo-Circinate Yaws.**—*Jl. Trop. Med. & Hyg.* 1921. Sept. 1. Vol. 24. No. 17. pp. 229–231. With 1 text-fig.

The author suggests that gangosa, and similar tropical ulcerations, constitute a late stage of papulo-circinate or " syphilitic " yaws, which again is a variety of yaws differing from raspberry yaws.

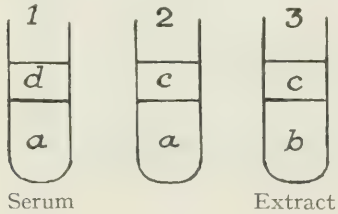
The paper is not convincing. Its contents were included in another published by the author in 1914, though this does not figure in the 19 references given and no allusion is made to it in the text [see this *Bulletin*, Vol. 4, p. 408].

A. G. B.

DE RAADT (O. L. E.). **De reactie van Sachs-Georgi bij framboesia tropica.** [The Sachs-Georgi Reaction in Yaws.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1920. Vol. 60. No. 2. pp. 313–317. With 1 text-fig.

The author quotes MÜNSTER, SCHRÖDER, FRÄNKEL and MERZWEILER on the reliability of the Sachs-Georgi as compared with the Wassermann reaction. As the Sachs-Georgi reaction is much less complicated than the Wassermann and appears to rival it in point of reliability, its advantages in tropical practice are obvious. The first essential is a reliable extract. This the author prepared according to the method described in the *Deutsche Med. Wochenschr.*, 1918, No. 49, p. 1349 :—

Twenty gms. of fresh bullock heart are extracted for about 14 days with 100 cc. of absolute alcohol. The extract is filtered until quite clear. To each 10 cc. are now added 20 cc. absolute alcohol + 1·5 cc. of a solution of cholesterine in absolute alcohol. The reaction with this extract is carried out as follows : The serum to be examined is, after heating to 55–56° C. for half an hour, diluted with 10 times its volume of 0·85 per cent. NaCl solution. 1 cc. is then introduced into each of two test tubes, 1 cc. of 0·85 per cent. NaCl solution being introduced into a third. The extract is now diluted with 6 times its volume of 0·85 per cent. NaCl solution and 0·5 cc. of this dilution added to each of tubes 2 and 3, while to tube 1 is added 0·5 cc. of a mixture of one part absolute alcohol with 6 of 0·85 per cent. NaCl solution. See Fig.



Serum Control. Extract Control.

a=1 cc. 10 times diluted in active serum.
b=1 cc. ·85 per cent. NaCl solution.
c=0·5 cc. 6 times diluted extract.
d=0·5 cc. alcohol and NaCl mixture.

The three tubes are now incubated at 37° C. for 7 hours, kept for a night at room temperature and examined next day with an agglutinoscope

or a magnifying glass. If the reaction is positive flocculi will be seen in tube 2 while tubes 1 and 3 remain clear.

The author gives the results of his examination of 239 cases :—

A. 80 persons with clinical framboesia—

Positive	70 = 87·5 per cent.
Negative	8 = 10 ,,
Positive with simultaneous flocculations in the serum-control tube	2

B. 15 persons with clinically cured framboesia—

Positive	14 = 93·33 per cent.
Negative	1

C. 9 persons with clinical lues or suspected of lues—

Positive	9 = 100 per cent.

D. 135 persons with other diseases, *e.g.*, malaria, pneumonia, dysentery, tuberculosis, etc., and also apparently healthy persons—

Positive	5
Negative	130

" It would appear from the foregoing," says the author, " that the serum reaction of Sachs-Georgi gives a positive result in the great majority of cases of framboesia tropica and may therefore be regarded as a sensitive test for this disease, even in cases apparently cured."

F. S. Arnold.

HALLENBERGER. **Die Framboesia tropica in Kamerun. Ausführungen ueber die Histopathologie der geschwürigen frambösischen Spätformen und der Rhinopharyngitis mutilans und deren Abgrenzung gegen tertiäre Syphilis.** [Yaws in the Cameroons. The Histopathology of the Ulcerative Late Forms of Yaws and of Rhinopharyngitis mutilans and their Differentiation from Tertiary Syphilis.]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1916. Sept. Vol. 20. No. 3. 35 pp. With 10 plates.

Every tropical physician recognizes, the author writes, that yaws consists not merely in polypapillomatosis, but also in a variety of disease forms affecting the skin, bones, joints and perhaps also the mucous membranes, forms which are at times indistinguishable from those of syphilis. That the two diseases are distinct was proved by NEISSER'S experiments on monkeys. Whereas a diagnosis between syphilis and yaws is as a rule possible in the early stages, with or without a histological examination of a lesion, in the late forms it is not always possible on clinical examination in a country where both affections are found. If the structure of a syphilitic condyloma and that of a yaw papilloma be compared it is found that the epithelial proliferation of the latter far exceeds that of the former, but this and other usual differences are not without exception. The only constant difference is the classical syphilitic change in the vessels, shown in the condyloma as in every other syphilitic manifestation. This change is not found in rhinopharyngitis mutilans ; hence its syphilitic origin is excluded.

A feature of this monograph are the admirable photographs, displaying well all the clinical forms of yaws, as well as the histology.

A. G. B.

GUERRERO (L. E.), DOMINGO (E.) & ARGÜELLES (M.). **Further Observations on the Treatment of Yaws with Castellani's Mixture.** —*Philippine Jl. Sci.* 1918. July. Vol. 13. No. 4. pp. 191–197. With 2 plates.

CASTELLANI's mixture and its uses were described in this *Bulletin*, Vol. 9, p. 257. The authors have employed it in 43 cases. On the first day one-third dose was given three times, on the second one dose twice, and subsequently one dose thrice. A total of 15-80 doses was necessary and a space of time from 5-27 days. Of the 36 cases in which the treatment was not broken off, 24 completely recovered, 7 showed improvement, 7 showed no improvement, and 5 had relapses; it is not stated how long the cases were followed. Protocols of 16 cases follow. CASTELLANI's conclusions are confirmed: "the cure of recent infections . . . is nearly as marvellous as that by salvarsan." The tendency of the mixture to cause emesis and iodism may be corrected, the former by increasing the sodium bicarbonate or by the exhibition of paregoric, the iodism by epinephrine. The plates show photographs of cases before and after treatment; [some of these are evidently transposed].

A. G. B.

VAN NITSEN (R.). **Action du sulfate de cuivre ammoniacal dans le pian.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1920. Nov. Vol. 1. No. 1. pp. 55–59.

The ammoniated sulphate of copper [? cuprammonium sulphate] was prepared on the spot (Belgian Congo) and was first tested on rabbits. It was afterwards given to native yaws patients intravenously in the doses used by J. MAUTÉ in Morocco (*Presse Médicale*, 1918, July 22) in 4 per cent. watery solution. Later the doses were 10, 20, 25, 30, 35, 40 cgm. at intervals of 48 hours. Twenty patients were thus treated: in 5 at the second period the lesions vanished after total doses of 1·77 gm. to 3·0 gm.; in 15 at the third period there was 1 failure, 2 improved and 12 cicatrisations, in 3 of which there was relapse; 0·7 to 3·88 gm. were employed. The injections are well borne and can be continued for six weeks or more. The treatment gives apparent cures only; it does not protect from relapse.

A. G. B.

HEAT STROKE.

Figueras Ballester (D. Luis). **Insolacion y Acaloramiento: Immunidad de la Raza Negra.** [Immunity of Black Races from Sunstroke and Heat Asphyxia.]—*Siglo Medico.* 1921. Mar. 26; Apr. 2. Vol. 68. Nos. 3511 & 3512. pp. 286–290; pp. 315–316.

The author reviews the theories of causation in these two pathological conditions and arranges them as follows:—

Theories based upon
- Infection .. .. exogenous. / endogenous.
- Asphyxia .. .. primary. / secondary.
- Auto-intoxication — primary. / secondary.
- Destruction of .. formed elements of the blood. / nervous tissues.

We may dismiss exogenous infection; but an auto-toxin, formed from destroyed blood elements, or nerve substance, may be present. Toxins in the blood, such as those from muscular fatigue, would be poisonous; and, during heat asphyxia, or any direct interference with the heat centres—as in sunstroke—there would be oxygen-hunger and excess of retained CO_2 [see this *Bulletin*, Vol. 11, pp. 169 *et seq.* Vol. 13, pp. 305–311, and Vol. 16, pp. 53–67]. Interesting as this long paper is, most of the factors considered have already been noticed in this *Bulletin*; even the main question with which Dr. Figueras Ballester deals—the difference in incidence between white and black races—will be found summed up in Vol. 16. On page 58 will be found a sentence beginning: "The black with his tissues protected by pigment," etc.

J. H. Tull Walsh.

McIntosh (John N.). **Heat Hyperpyrexia.**—*Brit. Med. Jl.* 1920. June 12. pp. 795–796.

The author describes the treatment of cases of heat stroke which occurred at Nasireyeh—May to August, 1916—when they "had not the luxury of electric fans or punkahs." "We dug a trench 6 ft. long by 8 ft. broad and 4 ft. deep, and covered with reeds. The majority of cases of hyperpyrexia came into hospital between 4 and 6 p.m. The rectal temperature was never less than 108° F."

As these cases arrived they were placed across the trench; 1-15 gr. of strychnine was injected and artificial respiration and lavage were employed. Relays of orderlies poured water over the patients. The trench quickly filled so that the patients were immersed except their heads. It was never safe to stop douching until the temperature remained fixed at, but never lower than, 101° F. An invariable sign of recovery was vomiting. As the patients became conscious they were removed to the hospital reed huts, and calico sheets were wrapped round them—head and trunk. Orderlies poured water over them, keeping the sheets wet. When the sun went down the same treatment was

continued in the open-air until there was a fall in atmospheric temperature, which occurred usually after midnight. On the following day, before it began to get very hot, every patient received an intramuscular injection of 3 gr. of quinine bihydrochloride; no instance of gluteal abscess or of sloughing occurred. No death occurred among 40 or more cases of this type treated by this method.

In one case choleraic symptoms appeared; hypertonic saline was injected; the temperature rose from subnormal to 108° F. The man died.

J. H. T. W.

Pattison (E. Seton). **Notes on a Case of Heat-Stroke with Hyperpyrexia.**—*Lancet.* 1920. Oct. 9. p. 749.

The chief features of this case are:—

Male passenger, aged 36: attacked in the Red Sea, August 18th, 1920. Wet bulb 87°, dry bulb 90°. Became immediately unconscious with dilated pupils that did not react to light. Temperature in the axilla 110° F. (verified by three thermometers). Patient was massaged with blocks of ice for periods of 15 minutes and dried in the intervals with hot towels. After one hour the temperature dropped to 108°; at the end of the second hour it was 106·4°. An injection of strychnine and digitalin [dose not given] was given, and in another hour the temperature fell to 105°. Ice was discontinued. He developed violent convulsions, which continued for four hours. An injection of morphia and atropin was given and the patient got some sleep. Next day temperature rose to 106°, and ice massage was resumed. The temperature fell gradually and the man recovered. [*v.* Willcox & Hill, this *Bulletin*, Vol. 16, pp. 53–59.]

J. H. T. W.

MISCELLANEOUS.

FOWLER (James K.). **An Address on the Colonial Medical Service as a Career.**—*Lancet.* 1921. Apr. 9. pp. 729–734.

Here may be found a list of the colonies and protectorates to which medical officers are appointed by the Secretary of State for the Colonies, a brief statement of the conditions and prospects of the medical service in each, and a fuller account of the emoluments, privileges, pensions, and professional attractions of the medical services of West Africa and East Africa. Among the attractions, the varied opportunities of original work are rightly emphasized. The author sides with those who think that a miscellany of medical services devoid of a professional head personage in London, who himself has been through the mill, is not the best possible arrangement either for the individual services, or for the administrations served, nor yet for the far-reaching advancement of learning on which the control of disease and the healthy development of all parts of the empire depend ; and he would like to see the colonial medical services unified, and organized and recruited on the model of other great medical services—the Royal Naval, the R.A.M.C., and the I.M.S.—with a head at the Colonial Office and a common entrance examination. With the adoption of this and other subsidiary measures for facilitating study, the author rightly believes that the colonial medical service might attain the highest status amongst the public medical services of the Empire.

A. Alcock.

HOBDAY (Frederick). **Observations on some of the Diseases of Animals Communicable to Man.**—*Lancet.* 1921. Apr. 2. pp. 726–728.

There is nothing particularly novel in this interesting lecture, the object of which is emphasize the fact, which is of importance both scientifically and from the practical preventive standpoint, of the existence of a considerable pathological territory common to human and veterinary medicine.

The diseases mentioned by the lecturer as communicable to man by animals are glanders (now, happily, nearly eradicated), anthrax, rabies, foot-and-mouth disease, several varieties of mange and of ringworm, tuberculosis, taeniasis, and trichiniasis.

A. A.

MEGAW (J. W. D.). **Indian Science Congress. Eighth Annual Meeting, Calcutta, 1921. Section of Medical Research, Presidential Address.** —*Indian Med. Gaz.* 1921. April. Vol. 56. No. 4. pp. 133–140.

The author notes that there is no accurate record of the distribution of many of the preventable diseases of India, and suggests that such a survey should be made by motor or caravan. Little use has been made of the case-records written up in the medical schools and colleges ; these should be kept on such a system as to allow the information to be tabulated and analysed at a central bureau ; any medical man could participate in such an enquiry. A study of cancer as it occurs in Kashmir and India might lead to valuable knowledge. As to beriberi, he gives instances in which the deficiency theory does not fit, but he is not quite accurate in stating that the truth of this theory rests on the identity of the diseases in bird and man. He admits there may be more

than one variety of beriberi. With regard to diabetes and McCay's work thereon, he suggests that a detailed enquiry into the habits of those classes which are most, and those that are least, affected may solve the problem as well as bring the solution home to the people. Infantile cirrhosis and goitre are other diseases which need study on the spot. As the author expresses it, we should look at the problems with the naked eye as well as with the microscope. He considers that if all our knowledge of prevention of disease in India were put into practice the average duration of human life would be doubled, and stresses the value of education of Indian children. Finally, he advocates the appointment of a committee, indicating the qualifications of its personnel, to consider what action should be taken to put medical research in India on a sound basis, what steps would ensure the most effective co-operation between medical and other forms of scientific research, and what should be done to make the results of medical research available for the improvement of the physical, intellectual and economic conditions of the people of India.

A. G. B.

Verhoef (A. W.). **Onderzoekingen naar aanleiding van het Cholesterine-gehalte van het bloed bij verschillende rassen.** [Researches on the Cholesterol Content of the Blood in Different Races.]—vi+56 pp. With 3 text-figs. 1920. Utrecht : P. den Boer.

After referring to the work of de Langen and others, who found the cholesterol content lower in natives of Java than in Europeans, 0·088 per cent. and 0·170 per cent. respectively, due, according to de Langen, not only to difference of diet but in part to a gradually acquired function of the endocrine glands, the author recounts experiments on himself and dogs, and comes to the conclusion that in the face of his high percentages, 0·181–0·182 per cent. in Indonesians having lived for some time in Europe, de Langen's endocrine theory is unconvincing.

In the author a fat-free diet reduced the cholesterol content by 20 per cent., in the dog 30 per cent. de Langen's figures show a debit of 50 per cent. in natives. The difference is 20 per cent. and more is thus still unaccounted for. The author therefore assumes a still unknown factor—possibly climate. As Schut found the difference in the sugar content of the blood to be due to this cause, he suggests the possibility that further research may prove climate to have a similar effect on the cholesterol content. Research in this direction should be undertaken in India itself : (*a*) on persons living in the same climate on different diets ; (*b*) in different climates on the same diets ; or, in other words, comparative statistics are needed of natives and immigrants on the "coast" and in the "hills." *Length* of residence may also play a part.

J. Campbell Graham.

Arkwright (J. A.), Atkin (E. E.) & Bacot (A.). **An Hereditary *Rickettsia*-like Parasite of the Bed Bug** (*Cimex lectularius*).—*Parasitology*. 1921. Mar. Vol. 13. No. 1. pp. 27–36. With 1 plate and 1 text-fig.

In attempting to infect bed-bugs with the virus of trench fever, by feeding them on suitable patients, the authors found in smears from the gut of these insects thread-like bacteria with shorter rod-like forms, and in some cases coccal or diplococcal bodies suggestive of the Rickettsia

found in lice from trench fever patients. Afterwards, these minute bodies were found in bugs that had fed only on healthy men, in newly-hatched bugs that had not fed at all, in bug's eggs taken from the ovary, and in smears of unhatched bugs, until finally the authors reached the conclusion that heavy infection with this parasite must be very general among bed-bugs.

The new-discovered parasite and its intracellular multiplication and development are described and figured. Smears of embryos and of various organs from older bugs show minute coccal, diplococcal, and lanceolate forms, the last exhibiting transitional changes to bacterial forms and rods. In certain enlarged cells of the Malpighian tubules—and apparently only there—the thread-like forms appear at full length. By dark-ground illumination the threads have been observed to discharge granules which the authors consider to be identical with the Rickettsia bodies that first attracted their attention.

The parasite was observed in bugs from several British sources, and from Warsaw, and also in a few specimens of *Cimex hirundinis*.

The paper begins with a general account of the characters of the *Rickettsia* genus and some critical and historical remarks on the nine declared *Rickettsia* species.

A. A.

Bacot (A.). **Rickettsia in the Bed-Bug ; Demonstration.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1921. Jan. 21. Vol. 14. No. 5. p. 92.

The demonstrator explained that the Rickettsia bodies show resemblances to bacteria, resemblances which in the absence of successful culture have not yet been interpreted. The species found in the bedbug resembles that found in the sheep-ked, and also in its development exhibits resemblances to *R. prowazeki* of typhus fever ; in addition to the diplococcoid form it shows rod-like and thread-like phases ; it passes to the bug by hereditary transmission, and so far as is known has no second host. Apparently all individual bedbugs are infected.

A. A.

Mayer (M.). **Ueber einige bakterienähnliche Parasiten der Erythrozyten bei Menschen und Tieren.** [On some Bacteria-like Parasites of the Erythrocites of Man and Animals].—*Arch. f. Schiffs- u. Trop.-Hyg.* 1921. Vol. 25. No. 5. pp. 150–152.

This is an argument regarding the nature of certain inclusions in the red blood cells of vertebrates—Grahamella, Bartonella, etc.—generally regarded as parasites. The author found in rats and a guinea-pig just recovered from a severe trypanosome infection numerous rods, like but even smaller than Bartonella, and dumbell forms reminiscent of Rickettsia, the blood-picture being that of a grave anaemia similar to that of Oroya fever. These forms might be conceived as representing degeneration-changes in the red cells, or as an outburst of some latent infection ; in the latter case the author would propose, under reservation, the name of *Bartonella muris*. The question then arises whether in the pernicious anaemia of man, where scanty and transient inclusions of a similar kind occur, there may not be some element of infection or excitation of infection. Finally the author refers to the suggestive bacteria-like parasites (*Bacillus krusei*) of the

frog described by KRUSE, and the vacuole-like inclusions associated with them, to which the name *Cytamoeba bactifera* was given. Here, however, the cultivation of undoubted parasites has not been successful.

A. A.

WYLER (E. J.). **Observations on the Wassermann Test, using a Method of Prolonged Fixation at Ice-Chest Temperature.**— *Jl. Path. & Bact.* 1921. July. Vol. 24. No. 3. pp. 349–354.

It has long been known that fixation of complement is profoundly influenced by temperature, and the present paper gives the results of more than 700 experimental comparisons of the method of fixation at ice-chest temperature devised by GRIFFITH and SCOTT (*Ministry of Health Rep. Public Health & Med.*, No. 1, 1920) with the method in routine use at the Military Hospital in Rochester Row (*Med. Res. Comm. Rep. Pathol. Meth.*, 1918, No. 1). Taking the comparisons as a whole, 74·4 per cent. gave the same results by both methods, 23·2 per cent. showed less fixation by the routine method, and 2·2 per cent. showed less fixation by the cold method. Taking some of the comparisons conditionally, it was found (a) that in 224 recently well-treated cases the method of cold fixation gave a much higher proportion of positive results than the said routine method; (b) that in 100 untreated cases the cold fixation method is not appreciably more sensitive, and is sometimes less sensitive; and (c) that in 238 cases sent " for diagnosis " the cold fixation method showed no marked superiority.

A. A.

SARKAR (Sarasi Lal). **A Peculiarity in the Spleen Rate as observed in the District of Chittagong Hill Tracts.**— *Indian Jl. Med. Res.* 1921. Apr. Vol. 8. No. 4. pp. 700–714. With 2 charts.

The spleen rate in the Chittagong Hill Tracts varies in different parts from about 40 to 75 per cent. In a curve representing examinations of 2,178 indigenous children the percentage rises up to the third year of life and then falls steadily to the age of 12. A somewhat similar phenomenon is revealed in Ross's records from Mauritius. But in the descendants of certain immigrants from the plains who settled in the Hill Tracts from 50 to 100 years ago the curve is different, and spleens of a large size are relatively more numerous.

A. A.

BLANCHARD (Raphael). **Notices Biographiques. XXIV. Louis-Daniel Beauperthuy, 1807-1871.**— *Arch. de Parasit.* 1919. Oct. 31. Vol. 16. No. 4. pp. 503–545. With 9 text-figs.

The interesting documents here collated reveal BEAUPERTHUY as one of those great original men who, if they do not soar with certain flight to undiscovered realms of knowledge, at any rate have visions of things beyond the reach of their contemporaries' thoughts.

BEAUPERTHUY was born in Guadeloupe in 1807 and came to Paris to graduate in arts and to study medicine in 1828. In the early years of his subsequent professional life he was in commission from the Paris Museum as a " voyageur naturaliste " in Venezuela and neighbouring territories; and in 1841, his mission over, he settled

in practice in Venezuela. Subsequently, having acquired fame by his work on leprosy, he removed to British Guiana and was appointed director of the leper-asylum at Demerara, where he died in 1871.

In his ideas as to the causation of the notorious diseases of tropical regions Beauperthuy was a worthy pioneer of the science of to-day, since he realized that there must always be a pathogenic agent, though it might be imperceptible to the unaided eye, and he saw quite distinctly that biting insects were at work inoculating some kind of morbid material.

In Yellow Fever he saw the "Tipulids" injecting a venomous haemolytic liquor under the man's skin, though he thought that the venomous property must be derived from the fishy matter on which the insects fed. In Malaria, again, he understands that it is not the merely humid air of the marshes, but the presence of "Tipulids" there that makes the marshes unhealthy; miasma is a chimaera, the ultimate cause of malaria is something that germinates and is transmitted by inoculation. All this, and much other interesting detail, is set down by the lamented author of this posthumous publication.

A. A.

França (Carlos). **An Early Portuguese Contribution to Tropical Medicine.** (Translated and Communicated by Clifford Dobell.)—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1921. Mar. 18 & May 20. Vol. 15. Nos. 1 & 2. pp. 57–60.

The contribution in question was one by a Portuguese colonist, Gabriel Soares de Souza, in 1587. In a description of Brazil he correctly stated the mode of conveyance of yaws from man to man—by small flies which feed on the sore and then settle on skin abrasions of the healthy—thereby anticipating the proof brought by Castellani 320 years later. Amongst other mentions of early contributions of the Portuguese to tropical medicine is one showing that the chigoe flea in the sixteenth century existed not only in Brazil but also in India, where it was called *nigoa* (Gaspar Affonso, 1596).

A. G. B.

Tijssen (J.). **Onderzoekingen over Oleum Chenopodii van verschillende herkomst.** [Researches on Chenopodium Oil of Different Origins.] —*Geneesk. Tijdschr. v. Nederl.-Indië.* 1921. Vol. 61. No. 1. pp. 79–96.

The author prepared the oil by distillation of wormseed cultivated by himself in Sumatra. This oil (spec. gravity 0·913) was tested by giving it to patients in doses of 16 drops three times, followed after six days by a course of American chenopodium oil in the same dosage. It proved to be very efficient and not inferior to the heavier sorts of oil. Flu, de Langen and Weehuizen (*Geneesk. Tijdschr. v. Nederl.-Indië*, 1918, Vol. 58, p. 820) concluded from their experiments that the heavier parts of the oil (ascaridol) contained the vermifuge element. Tijssen found, after separating the lighter and heavier parts of the oil, no difference of any importance between their vermifuge effects. Specific gravity and other physical properties of the oil may differ greatly without interfering with the vermifuge action of the drug.

W. J. Bais.

Gonzaga (A. Gavião). **Contribuição ao saneamento do Nordeste.**—*Brazil Med.* 1921. Mar. 12. 35th Year. Vol. 1. No. 11. pp. 134–135.

Notes on the regional nosology of the State of Rio Grande do Norte. The author divides the State into three zones, littoral, rural belt and interior. Helminthiases are very prevalent. Of 1,235 examinations of faeces made by the author 513 showed the presence of intestinal parasites. *Schistosomum mansoni* was found five times, once alone and four times in association with other parasites. *Gigantorhynchus gigas* was found twice. Amoeba dysenteriae was found alone in ten cases and in eight associated with various helminths. The inhabitants of the interior were found to suffer much less from intestinal parasites than those of the other two zones, a fact which the author attributes to its much lower density of population. Leishmaniasis was not found. Malaria is only locally prevalent and is confined to the littoral and rural belt zones. Tuberculosis is rare, especially in the zone of the interior, where the climate is healthy and the consumption of alcohol is trifling as compared with that in the interior of the southern states of Brazil. Leprosy is rarer still, almost all the cases found hailing from Amazonas or Pará. Syphilis is exceedingly prevalent.

F. S. A.

Livingston (A. E.). **The Comparative Toxicity of Thymol and Carvacrol (Isothymol).**—*Public Health Rep.* 1921. June 10. Vol. 36. No. 23. pp. 1317–1331. With 1 chart in text.

The author details some of the unpleasant symptoms which have followed the administration of thymol and chenopodium oil, indicating that new or additional specifics should be sought. Till recently carvacrol, an isomer of thymol, could not be produced cheaply, but recently it has been prepared on a large scale from spruce turpentine, itself obtained in large quantities as a by-product in the manufacture of wood pulp. Its source of supply is therefore assured and the raw materials are inexpensive. It is a liquid at body temperature, which improves its chance of coming in contact with the intestinal wall.

For the experiments 109 rabbits were used and the results are expressed in tables. It is concluded that the toxicity of thymol and carvacrol on rabbits is essentially the same. It was shown besides that in the toxicity of the two drugs as tested on paramecia there was no striking difference and the relative anthelminthic value in tests on earthworms was practically the same.

A. G. B.

Basu (Charu Chandra). **Observations on the Chemical Behaviour of Malarial Pigment, with a Note on the Nature of Pigment found in the Liver of Kala-Azar Cases.**—Reprinted from *Indian Jl. Med.* 1921. Mar. Vol. 2. No. 1. pp. 328–331.

The author was not able to demonstrate iron in malarial pigment, from livers and brains of pernicious malarial cases, by microchemical methods, but malarial tissues preserved in Kaiserling mounting solution, when suitably treated, yielded a dark coloured solution which showed definite haematin bands. Kala azar livers were often pigmented; the pigments behaved chemically like malarial pigment, but the distribution is different—in the intercellular connective tissue and the liver cells, whereas in malaria it is confined to periportal tissue

and endothethial cells lining capillaries. Formalin fixed livers often show pigment free in the liver capillaries. These are haematin granules formed by the action of formaldehyde on haemoglobin. They respond to the tests for malarial pigment and can be only differentiated from the latter by their distribution.

A. G. B.

PIRIE (J. H. Harvey). **Blood Testing Preliminary to Transfusion, with a Note on the Group Distribution among S.A. Natives.**—*Med. Jl. S. Africa.* 1921. Jan. Vol. 16. No. 6. pp. 109–112. With 2 text-figs.

A clear account is here given of the blood testing preliminary to transfusion, an essential process, because serious and even fatal haemolysis has sometimes followed blood transference. SHATTOCK and LANDSTEINER in 1900 found that the serum of certain persons produced clumping of the red cells of certain others, i.e. iso-agglutination. Such persons were divided into three groups according to their reactions but, later, Moss showed that there was a fourth group.

MOSS'S GROUP CLASSIFICATION.

Serum.	Cells.				No. of Individuals in group.
	Group I.	Group II.	Group III.	Group IV.	
Group I ..	0	0	0	0	I.= 5 per cent.
Group II ..	+	0	+	0	II.=40 ,,
Group III ..	+	+	0	0	III.=10 ,,
Group IV ..	+	+	+	0	IV.=45 ,,

+=Agglutination. 0=No agglutination.

Haemolysis practically always occurs synchronously with agglutination. Transfusion can be made free from risk if the action of the recipient's serum on the erythrocytes of the proposed donor is ascertained beforehand, and this can readily be done by finding to which group both donor and recipient belong. The action of the donor's serum on the recipient's cells is hardly appreciable and can be ignored. The blood of a donor belonging to the same group as the recipient, or belonging to Group IV (the cells of which are not agglutinated by any of the serums) can then be collected for transfusion.

For testing, one requires a small stock of Group II and Group III sera, glass slides and a needle. The reaction of a drop of serum with a smaller drop of blood is studied on a slide. According to whether both sera, or No. III only, or No. II only, or neither agglutinate, reference to the table will show that the person belongs to Group I, II, III or IV. A donor of Group IV is a " universal donor." Donors

must, of course, be free from syphilis and malaria. For the method of transfusion the reader is referred to ROBERTSON.*

The generally accepted hypothesis to explain the facts given above is that there are two distinct normal human iso-agglutinins in serum and two corresponding agglutinogens or cell-receptors in red cells. These produce the group distribution of human bloods according as both, one or other, or neither are present in the individual concerned. These iso-agglutinins and their receptors appear to be heritable qualities, the transmission of which follows the Mendelian law. The receptors of agglutinable properties of the cells are empirically designated A and B, the corresponding agglutinins a and b, and their distribution may be shown thus :—

	Group.			
	I.	II.	III.	IV.
Cells	AB	A	B	O
Serum	o	b	a	ab

L. and H. HIRSCHFELD examined blood from a large number of different races at Salonica in the war and found that the serological formula for any race was "surprisingly" in agreement with its geographical distribution. The nearer the race to Western and Central Europe the more A; the nearer to Africa and Asia, the more B. When the ratio A-B is called the biochemical race index, the index of Europeans lies between 4·5 for the English and 2·5 for the Greeks, the Asio-African type lies between 1·09 and 0·5 (Indian) and the Arabs, Turks and Russians are intermediate. Climatic factors, *per se*, did not explain the difference in group distribution. They put forward the assumption that "A" and "B" qualities had different geographical points of origin, indicating two biochemically different races of mankind, one of which probably originated in Central Asia, and the other in North or Central Europe.

The author examined the blood grouping of the South African natives to compare their index with that of the Senegalese, 0·8, examined by the HIRSCHFELDS. Of the 250 so far tested, "A" qualities are present in 28·8 per cent. and "B" qualities in 20·8 per cent., giving a race index of 1·4, which would place the South African native in the intermediate group; and the author recalls that the Bantu stock is believed to contain a considerably larger impregnation with Hamitic (Mediterranean) blood than the West African negro. The author states that he obtained his Group II and Group III sera from the Lister Institute.

A. G. B.

* ROBERTSON (Oswald H.). iv. Memorandum on Blood Transfusion.—*Medical Research Committee. Special Report Series, No.* 25. 1919. pp. 143–180.

Breinl (A.). **An Inquiry into the Effect of High Wet Bulb Temperatures upon the Pulse Rate, Rectal Temperature, Skin-Shirt Temperature and Blood Pressure of Wharf Labourers in North Queensland.**—*Med. Jl. Australia.* 1921. Apr. 16. Vol. 1. 8th Year. No. 16. pp. 303–312. With 1 chart in text.

The observations here recorded in detail were made on men doing manual labour under natural conditions during the hot months in Townsville. About 180 men were examined, and for comparison observations were carried out on men loading frozen meat at a temperature below freezing point.

The observations show that with the higher wet-bulb readings there is a tendency for the rectal temperature to rise and remain high, though even with the wet bulb at 30° C. the averages of rectal temperatures were only between 37·7° and 38·3° C. The "skin-shirt temperature" (i.e. the temperature recorded by a thermometer placed under the shirt and kept from contact with the skin by a wire cage) did not vary greatly, but was much lower in the men working in the freezing room.

The average pulse-rate did not show constant variations, perhaps it was slightly higher on hot days. The average systolic blood-pressure—which the diastolic pressure closely followed—did not show constant changes beyond a tendency to fall with the progress of the day and the concomitant profuse sweating.

A. A.

Bercovitz (Nathaniel). **American Children in the Tropics.**—*Jl. Amer. Med. Assoc.* 1921. June 11. Vol. 76. No. 24. pp. 1649–1651.

The author, writing from the American Presbyterian Hospital at Hainan, South China, notes that of 16 children born to American missionaries during the last seven years all are alive and well to-day. Chinese infants and children in the island suffer from infantile tetanus, smallpox, malaria, hookworm, and dysentery, especially of the amoebic type. Against all these the American child has to be guarded and in addition he has to combat the great heat. The problems of feeding of infants are discussed; fresh cow's milk is not obtainable. It is stated to be impossible, owing to the heat, for a child to play outside between eight in the morning and five in the afternoon. The climatic conditions produce prickly heat and boils, and abdominal chill is brought about by sudden breezes which spring up. Change to a cooler climate for part of the hot season quickly restores vigour. Following malaria, the greatest cause of discomfort is the round worm, for which santonin is specific. Measles and whooping cough are found, but not scarlet fever, rheumatic fever or diphtheria. Colds and sore throats are common and a mild form of tonsilitis.

The author finds that healthy American children can be brought up in Hainan provided that the houses give plenty of space, good ventilation and proper screening protection; that the mother is prepared to exercise ceaseless vigilance in co-operation with the physician; that good medical care is available; and that yearly changes to a cooler climate are possible for both mother and children.

A. G. B.

Dufougeré (W.). **De l'utilisation rationelle de la main d'oeuvre pénale en Guyane.**—*Bull. Soc. Path. Exot.* 1921. May 11. Vol. 14. No. 5. pp. 258–265.

This paper is not meant as an indictment of the administration of the French penal settlement in Guiana so much as a plea for turning the convict labour there to fruitful purpose. It is argued that although the climate of French Guiana has an evil reputation, it is not—apart from preventible malaria—more unhealthy than other tropical climates, and that so far as the ordinary civil population is concerned its evil reputation is undeserved.

With the convict population, however, the state of things is very different. There the morbidity and mortality are something appalling, being due chiefly to malaria and ankylostomiasis.

The author makes some very reasonable sanitary recommendations, including suggestions for an improved scale of diet; and he very justly argues that if these were adopted, and if also convicts who work properly were rewarded, so that they could procure a few small comforts and luxuries of food, the health and also the moral tone of the penal settlement would be enormously improved, and the whole colony would reap the benefit in the form of useful public works.

[Anyone who remembers the great convict settlement in the Andamans—at any rate as it was in the eighties and early nineties—will support the author's argument. There it was almost a comfortable sight to see a mass of more or less damaged and tarnished humanity being worked into an orderly industrial association without any obtrusive display of the big stick.]

A. A.

Batta (G.). **Une plante médicinale brésilienne :** *Davilla rugosa.*—*Arch. Méd. Belges.* 1921. Jan. Vol. 74. No. 1. pp. 15–20.

Davilla rugosa, belonging to the order Dilleniaceae, is astringent and analgesic. In the treatment of orchitis, haemorrhoids, and other conditions of painful and inflammatory stasis, it is said to be superior to belladonna, hamamelis, and mercurial ointments. Originally the boiled or bruised leaves were used as a sort of poultice by empirics, but it is now recognized in the pharmacopoeia of Brazil in the form of an extract which is made up with an equal quantity of lanolin as an ointment, or is made into pills of 0·25 gm. for internal use. A liquid extract can also be made by infusion or preferably by decoction.

A. A.

Avery (L.) **Some Impressions of a Regimental Medical Officer with Mounted Troops during Operations in Egypt and Palestine, 1914 to 1918.**—*Jl. Roy. Army Med. Corps.* 1921. June. Vol. 36. No. 6. pp. 456–459. With 2 text-figs.

The author would prefer that the regimental M.O. should have his stretcher-bearers posted from the field ambulance instead of allotted from the regiment by the C.O. He gives a design of a folding stretcher, to be built of bamboo and to weigh about 10 lb., suitable for mounted troops moving too quickly for the medical cart. He utterly condemns the Maltese pattern of medical cart: on a good road it is possible, on a rough road a nuisance, and so on a steep road absolutely dangerous, as it has no brakes and only one horse to steady it: moreover, it is impossible to get at the panniers without unloading the whole cart.

A four-wheel cart with two horses is the right thing, and it should carry a pack saddle, so that when its progress is stopped the more important contents can be carried on by one of the horses. The Rapid Transit Galloping Ambulance can follow mounted troops almost anywhere, and though light will stand anything. A standard syringe would be a blessing and a great economy ; at present there are seventeen or more different sorts and sizes of hypodermic and serum syringes in use, so that one may possess the component parts of a dozen without being able to make up one than can be worked. The author invites attention to and discussion of all these points.

A. A.

DE RUDDERE (A.) **Le service sanitaire belge pendant la campagne de l'Est-African allemand.**— *Arch. Méd. Belges.* 1921. May. Vol. 74. No. 5. pp. 387–399. With 1 plate.

To the information published by RODHAIN [see this *Bulletin*, Vol. 14, p. 236] the author does not add much. The mortality of the porters in the East African campaign, as RODHAIN showed, was five times that of the troops. In justification of the employment of black troops rather than white in such tropical campaigns the author records the losses of a force of Frenchmen who fought in Madagascar ; they were as follows :—

Killed by the enemy	7
Wounded	94
Died of disease	5,600
Sick	15,000

In the East African campaign the British effectives (South Africans) were at one time reduced by 30 per cent., while the reduction of the Belgian effectives (natives) did not exceed 18 per cent.

A. G. B.

CURJEL (Dagmar F.) **The Reproductive Life of Indian Women.**— *Indian Jl. Med. Res.* 1920. Oct. Vol. 8. No. 2. pp. 366–371.

Considering that knowledge of the average age of the onset of puberty, its association with early marriage and the average duration of menstrual life among Indian women, is desirable for the correct treatment of the various morbid gynaecological conditions associated with these ages, the author caused enquiries to be made in many parts of India. The results were as follows :—

" (1) Among 489 Indian women, representing many different castes and races, the average age of the onset of puberty (catamenia) was 13·63 years. The age of onset of puberty for Indian women lies within the limits for European races.

" (2) The average age at marriage among the same women was 13·83 years. Early marriage does not appear to exert any appreciable influence on the onset of puberty, since the average age of onset remains practically constant among Mussulmans (140 cases), 13·64 years ; Hindus (268 cases), 13·62 years ; and Indian Christians (81 cases), 13·69 years ; although the age of women at marriage among the last group, 16·82 years, is higher than among either Mussulmans, 13·84 years, or Hindus, 12·91 years.

" It is also noteworthy that the average age of onset among a group of unmarried women students (56 cases), 13·87 years, resembles the average age among the married women, 13·63 years.

" (3) The average duration of menstrual (reproductive) life among Indian women (74 cases), 32·14 years, does not appear to differ materially from the limits for European races.

" The earlier age at marriage among Indian women does not appear to influence the duration of their reproductive or menstrual life as compared with European races."

A. G. B.

NÚÑEZ (M. F.). **Administration of Arsphenamin in the Tropics.** [Correspondence].—*Jl. Amer. Med. Assoc.* 1921. June 11. Vol. 76. No. 24. pp. 1697–1698.

" Throughout South America, Ravaut's method [concentrated solution] has been for years the practically universal mode of administration. A small 2 cc. syringe is used instead of the larger and less common one of 5 cc. The 2 cc. Lüer syringe with metal sterilizer case is of great convenience. It is conveniently heated with a small piece of cotton saturated with alcohol, or a couple of hexamethylenamin tablets.

" In difficultly accessible regions where freshly distilled water is unavailable, the physician simply takes water from a running stream (well or cistern water is less preferable, as it usually contains more minerals in solution and its freshness is not certain), which he filters through cotton, boils thoroughly, and cools by setting the container in a vessel of cool water. The syringe may be sterilized in the same water and withdrawn by a pair of forceps, the jaws of which have been sterilized by dipping in alcohol. Two cc. of the sterilized water is drawn into the syringe and injected into the ampule containing the neo-arsphenamin, the ampule being opened only when everything is ready for making the solution. The water is withdrawn and reinjected, and the ampule shaken until the drug is completely dissolved. The injection is given in the vein *immediately*, slowly, and with vigilance to prevent any of the highly concentrated liquid being injected into the tissues outside the vein. In case such an accident occurs, the needle is instantly withdrawn and the injection continued at another site. A syringeful of sterile water is then injected into the area of extravasated drug to stop the pain.

" I have seen hundreds of injections given in this way, and the results have been in all respects as satisfactory as with the more elaborate and refined methods in vogue elsewhere. This reduces the administration of neo-arsphenamin to the simplicity of any intravenous injection, and places it in the hands of the most modestly equipped practitioner. I have witnessed its administration by the side of a jungle trail, on a river raft, on the counter of a country store and in the huts of the peons."

A. G. B.

DODDS (A. B.). **Compensation of Mine Native Labourers.**—*Proc. Mine Medical Officers' Assoc.* 1921. May. Vol. 1. No. 2. pp. 1–3 (Discussion pp. 3-5).

FREW (A.). **A Contribution to Symposium on Sepsis.**—*Ibid.* pp. 8–9.

HAWARDEN (S. A.) **Notes on Treatment of Sepsis.**—*Ibid.* p. 10 (Discussion pp. 10–15).

BUTT (H. T. H.) [**Contribution to Resumed Discussion on Sepsis.**]—*Proc. Transvaal Mine Med. Officers' Assoc.* 1921. July. Vol. 1. No. 4. pp. 5–14.

At a Meeting of the Mine Medical Officers' Association held in May, besides the papers the titles of which are given, a discussion took place on the refusal of natives to undergo necessary operations. A case was cited in which a native had given consent for an operation on himself. The native died and because their approval had not been obtained his relatives demanded and obtained compensation. The difficulty about

compensation is to secure uniformity of assessment of disability. It was generally agreed that some central authority was needed, at all events for all but cases in which small sums were in question.

Dr. ORENSTEIN cited the following instructions to unskilled or native dressers under Medical Officers of the Rand Mines group :—

"At each compound dressing station there should be provided two atomizers, one containing tincture of iodine (this atomizer must have rubber fittings), and the other 2½ per cent. carbolized oil (this atomizer must be of the oil spraying variety, such as the "de Vilbiss"). Stringent instructions to be issued to all dressers in charge of these stations to treat all minor wounds as follows :—

"(1) The wounds are not to be washed, or touched with the fingers in any way, except to remove foreign bodies by means of a clean swab dipped in antiseptic solution, or with clean forceps.

"(2) Spray with iodine the whole wound and the skin around it for at least half-an-inch.

"(3) After the iodine, spray the same surface heavily with the oil.

"(4) Cover with a piece of dry antiseptic gauze or dry boric lint.

"(5) Cover this with a piece of clean cotton wool if necessary, and bandage.

"(6) Use iodine only the first two times the wound is dressed.

"(7) All dressings to be kept in clean vessels provided with tight lids."

Quite a different method is adopted for simple dressings at Randfontein, where 15,000 boys are employed. Dr. GOUDIE had suggested the following procedure :—

"That the swab, which had been placed in a little Hycol solution, should be put on the wound, and the wound swabbed clean. The skin should be painted with a swab of iodine, and also the wound swabbed with it, and then the wound painted and thoroughly cleaned with another iodine swab. They then had a clear and clean area round the wound, and a more or less iodised coating. The dressing was then applied—white precipitate ointment, half-strength of B. P. That was spread on lint and placed on the wound after it was iodised. They used nothing else at all, and he must say that it had most astonishing results, was very cheap, and somehow seemed to keep the boys well. It seemed to keep out water and dirt to a large extent."

A. G. B.

TAYLOR (J. A.). **An Improvised Antiseptic Adhesive Dressing.**— *Jl. Trop. Med. & Hyg.* 1921. June 1. Vol. 24. No. 11. p. 155.

Ordinary adhesive plaster is apt to deteriorate in the tropics, and as a substitute guttapercha tissue and eucalyptus oil are here recommended, both articles being generally at hand. For a small clean wound the oil is applied direct and then the tissue. For wounds that require a dressing (or a bandage) the skin round the dressing is smeared with the oil and the tissue spread over all. To remove the tissue more of the oil is applied as a solvent.

A. A.

SNOW (William F.). **Transactions of the American Society of Tropical Medicine, Sixteenth Annual Meeting held at New Orleans, Louisiana, April 26 and 27, 1920. Contributions to Medical Science developed under the Auspices of the United States Interdepartmental Social Hygiene Board.**— *Amer. Jl. Trop. Med.* 1921. March. Vol. 1. No. 2. pp. 97–108.

The United States Interdepartmental Social Hygiene Board is the euphemistic title of the body, created by a law passed in 1918, whose

function it is to control syphilis and gonorrhœa, the agents of which the author calls "those great criminals of biology." He refers to the great prevalence of these diseases in the tropics and to the peculiar qualification of workers in tropical medicine, owing to their familiarity with laboratory and epidemiological methods, to promote the campaign against them, but the paper does not otherwise touch the tropics. It gives details of the principal researches promoted by the Board in the United States of America.

A. G. B.

Mense (C.). **Die deutsche Tropenmedizin vor 25 Jahren und später.**—[German Tropical Medicine 25 Years Ago and After.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1921. Vol. 25. No. 1. pp. 2–13.

Ziemann (H.). **Einfluss der Tropenmedizin auf die medizinische Wissenschaft.**—[Influence of Tropical Medicine on Medical Science.] *Ibid.* pp. 14–31.

These articles, written in celebration of the 25th year of publication of the journal in which they appear are, as the title of the first would imply, glorifications of German achievements in this direction, which all will admit have been great, but in an outline of the history of malaria research the name of Laveran does not appear and there are other, if less striking omissions. Ziemann is the more disposed to give honour where it is due, but in his account of the transmission of *T. lewisi* by the rat flea we miss the names of Minchin and J. D. Thomson and in that of Romanowski staining methods the name of Leishman. His paper contains much well-digested information.

A. G. B.

Mackey (G.). **Note on the Variation in Results obtained with Bacteriological Sugars.**—*Indian Jl. Med. Res.* (Special Indian Science Congress Number, 1920.) pp. 55–57.

References have been addressed to the Kasauli Institute regarding the purity of the sugars at present in use, references implying error in the identification of specific micro-organisms. Whether the sugars or the peptones formerly obtained from German sources were purer or more sensitive that those now supplied the author cannot say; but he has found that the vigour of fermentation and gas-formation are "very closely related to the particular medium on which the seed is grown before sowing the sugar media." It is advisable, therefore, "when determining the sugar reactions of an organism to sow the sugars from a fluid broth culture and not from a slope agar culture. And it is very necessary to be precise as to conditions of culture before incriminating the strain or the sugar used as at fault when the results do not come up to expectation."

A. A.

Graham (George Walter). **Some Factors in Thermal Sanitation in the Tropics.**—*Jl. of Hyg.* 1921. Jan. Vol. 19. No. 3. pp. 245–276. With 3 charts, 3 figs. and 1 plate.

This paper deals with the heat-absorbing properties in Upper Egypt of various coloured materials and fabrics, and to a less extent with experiments on the translucency and porosity of materials used for clothing.

The author, who had been accustomed to wearing white shirts, found a khaki shirt much hotter in the sun and a preliminary experiment showed that khaki cloth attains a higher temperature in the sun than cloth of a white colour. He therefore experimented with 14 samples of cloth: black, dark blue, khaki, pale blue and white, and of various textures. The method of test is fully described. These cloths were found to absorb solar heat in the order mentioned above, an unwashed white drill being the coolest. Under given conditions black cloth attained an average temperature of 85°, white drill of 57° C. Paints were then tested in a similar way, applied on cylindrical test flasks with a thermometer inside. Here the absorption ranged from high in the case of black, through green, brown, khaki, cement, red, cream, white enamel to white-wash; the range was from 62·9° to 45·3° C.

The sum of the experiments showed khaki paint to be 22·5° F. hotter than whitewash. A polished metal surface gave a temperature approximating to that of red paint. "A practical test was made by whitewashing the half of the galvanized corrugated iron roof of a barge, the other half remaining in the usual condition," with the dull appearance of weathered metal. "In the sunshine of the middle hours of the day the difference between the temperatures of the two halves was very striking." Some building bricks also were tested. Burnt brick attained a temperature of 53°, while mud or burnt brick whitewashed reached 46° only. In a further series sets of cloth and sets of paint were exposed at the same time. Here the black and khaki cloth attained a higher temperature than the black painted tin. The porosity of cloths was tested by a special apparatus. The figures obtained showed that old calico is twice as porous as new, which again is double as porous as khaki solaro and white drill. In tests for evaporation the rates were almost the same with calico and khaki drill; the texture makes little difference. The translucency of cloths was tested by exposing sheets of ordinary photographic P.O.P. in full sunlight behind strips of different kinds of cloth. The results are depicted in a plate. They seem to show that the proportion of ultra-violet rays that penetrates is negligible. The writer has found by experience that white calico, which was the most translucent of the cloths tested, is an efficient protection to his skin.

"There are many facts that suggest that the harmfulness of the ultra-violet rays of sunlight in the tropics has been much over-rated, and among them may be noted the conditions prevailing in Alpine resorts where, possibly owing to the altitude (Langley), but perhaps mainly due to the efficiency of snow in reflecting rays of the shorter wave lengths, there are exhibited ordinary effects of ultra-violet light such as extreme sun-burning and conjunctivitis of the eyes, yet it appears that no case of "sunstroke" has been recorded from these cold regions. Other illustrations can be drawn from elevated districts within the tropics such as the plateaux of Abyssinia, the higher parts of East Africa and South America, where, so long as the temperature is cool, life seems to be pursued with little attention to the violet and ultra-violet rays, which must be at least as powerful as in the hotter, low-lying parts, where protection against them has been so strongly upheld."

The author notes that there is a peculiarity connected with sunburning that remains to be explained: though a thin covering is enough for protection, the sun's rays need not act directly, for the face becomes burnt up to the point where the hat touches the forehead though the face itself may be completely in shadow.

To obtain evidence on the effect of wearing a white shirt under a khaki coat, the influence of white layers under khaki was tested. It was found that the intervening white layer made practically no difference to the temperature.

The general effect of the paper is to show the coolness of white as compared with other colours. As to translucency, even fairly thin white cloth appears to afford all the protection necessary to preserve tender skins from ordinary physiological effects of the shorter wave lengths of solar light. Another advantage in white clothes is that they attract neither tsetse flies nor mosquitoes.

A. G. B.

Huntington (Ellsworth). **The Relation of Health to Racial Capacity : the Example of Mexico.**—Reprinted from the *Geographical Review*. 1921. Apr. Vol. 11. No. 2. pp. 243–264. With 10 text-figs.

Ellsworth Huntington is the author of "Civilization and Climate," recently reviewed at some length in this *Bulletin* [Vol. 17, p. 345]. In the present paper his object is to show how in Mexico health plays a part in determining racial character, but incidentally his discussion and the statistics given are of interest to *Bulletin* readers. He gives a tabular comparison of death-rates in various cities of the world for the period, in most instances, of 1901–13. This is headed by Amsterdam and London with 12·6 and 14·7 per mille respectively, and concluded with Cairo and Lucknow, just above which come Vera Cruz and Mexico City with 41·2 and 45·7. Taking the death-rate as the best measure of the health and vigour of a community, he assumes a very high degree of ill-health in Mexico. Mexico City, lying at an elevation of 7,500 feet, and being free from malaria, should be a healthy place, as should the municipalities which surround it, but in these also the death-rate varies from 30 to 52. The author believes that the great cause of most of the poor health of Mexico is the climate. He classes the tropical cities of his table thus :—

"(1) *Low, moist and hot :* Calcutta, Panama, Bombay, Madras, and Vera Cruz. Average death-rate 34·6.

"(2) *High, dry and cool :* Johannesburg and Mexico City. Average death-rate 37·6.

"(3) *Low, dry and hot :* Cairo and Lucknow. Average death-rate 53·8.

"Of course the number of cities in these three groups is by no means enough to lead to positive conclusions. Many other facts, however, point so clearly in the same direction that we may regard the groups as typical. They lead to the following conclusions :—

"(1) Tropical highlands have by no means the advantage in health that is usually supposed.

"(2) Dry tropical regions are in general worse than those that are moderately moist, provided we consider only those places from which such scourges as malaria and yellow fever have been eliminated.

"(3) Among the well populated parts of the tropics undue dryness on the one hand and monotony on the other do almost as much harm as high temperature. This does not mean that extreme humidity is good, but the point that we are here making is that, in spite of the popular impression to the contrary, dry heat is not so good as that with a reasonable amount of moisture."

Mexico is not alone in its indications as to the harmfulness of dry air. In India, as appears from a ten-year seasonal curve, the dry winter

season, in spite of its more favourable temperature, is much less healthful than the wet season in summer. Extreme humidity at high temperatures, however, is equally adverse, as the seasonal varieties at Vera Cruz show. Another table exhibits the variations in temperature of some of the chief places in Mexico. In Mexico City the difference between the mean temperature of the coldest and that of the hottest month is only 13° F., " only from a third to a fifth as great as in the north-eastern United States." Such variations are considered by Huntington as one of the greatest aids to health.

A series of charts shows in a graphic manner the distribution of malaria, dysentery, respiratory diseases, tuberculosis, smallpox and typhus in Mexico.

A. G. B.

Boucher. **Sur un bacille septique aérobie.**—*Bull. Soc. Path. Exot.* 1921. Jan. 12. Vol. 14. No. 1. pp. 31–38.

This bacillus was isolated from five cases of meningitis at Tananarive, Madagascar, in one of which it appeared to be the causal agent. Inoculated into animals it produces gangrenous lesions. It is seldom found in pure culture, probably owing to the fact that it is usually a secondary invader. The bacillus is spore-bearing, stains by Gram, and is non-motile ; it grows very rapidly. The author compares it with other described bacilli, and concludes that it is a new species, which he designates *Bacillus septicus meningitidis.*

A. G. B.

Cardamatis (Jean P.). **Les Mégalosplénies de cause inconnue. Mégalosplénies infectieuses.**—*Bull. Soc. Path. Exot.* 1921. Mar. 9. Vol. 14. No. 3. pp. 168–179. With 1 text-fig.

An abstract and discussion of two fatal cases of " infectious idiopathic splenomegaly," occurring one after the other in two children, aged respectively 8 and 5 years, of the same family in Greece, the examination of blood and spleen-pulp both by microscope and by culture being negative. The first symptom of all was intense anaemia ; then followed wasting and gradual enlargement of the spleen ; there was tumefaction of the liver, but no sign of jaundice either of skin or of conjunctiva, and no ascites ; throughout the course of the disease there was fever of an interrupted and remittent type. As in Banti's disease the percentage of neutrophile polymorphs was much reduced, and there was no appearance of myelocytes. There was slight evidence of rickets and the author thinks that rickets and malaria may possibly have been predisposing causes. The parents were young and perfectly healthy and free from all suspicion of tubercle, syphilis and alcoholism. The author carefully differentiates these cases from Banti's disease and from other forms of splenic leucaemia, and thinks that they must be classed as splenomegaly of an unknown nature, but attributable to some virus.

A. A.

Chabukswar (Y. V.) **A Barbaric Method of Circumcision amongst some of the Arab Tribes of Yemen.**—*Indian Med. Gaz.* 1921. Feb. Vol. 56. No. 2. pp. 48–49. With 2 text-figs.

One gathers that the formidable operation here described is peculiar to one district called Al Hoora, which includes six villages. The

operation takes place on men who intend to marry ; it is performed with many rites, *coram populo* ; no anaesthetic is allowed, and it is abandoned if the victim winces. In the horrible "operation," the knife is inserted about an inch below the umbilicus, and all the skin of the pubis and penis is flayed off, a portion of the urethra sometimes coming with it. Hernia and urethral fistula are common results. The wound takes months to heal and deaths from sepsis are common.

The author's photographs of cases that subsequently came under the Civil Surgeon of Aden for relief of hernia and fistula due to the operation are evidence that men do submit to this extraordinary kind of circumcision, and are alive to testify to it. Truly, as Carlyle says, there is no such strange animal as man.

A. A.

Cartron & Bacqué. **Notes sur la vaccination antipneumococcique et la sérothérapie antipneumococcique chez les tirailleurs sénégalais à Biskra (Algérie), 1919–1920.**— *Ann. de Méd. et de Pharm. Colon.* Paris. 1920. Dec. Vol. 18. pp. 46–61.

The Senegal Rifles [strength not stated] stationed at Biskra seem to have had a bad time. From May–October, 1919, there were 239 hospital admissions for jaundice and 245 for guinea-worm, and from May, 1918, to May, 1920, 203 deaths from tubercle.

As regards pneumonia and pulmonary congestion the admissions were : from May, 1918, to May, 1919, 646 hospital admissions ; from May to November, 1919, 56 ; and from November, 1919, to May, 1920, 19.

Antipneumococcic vaccination has not given any conclusive results ; but antipneumococcic serum has distinctly mitigated the course of individual cases of pneumonia. The first injection (40 cc.) should be given at the commencement of the attack, and the injection should be repeated daily for at least three days.

A. A.

Campos (J. J.). **Chronic Lead Poisoning in the Printing Presses of Calcutta.**— *Indian Med. Gaz.* 1921. May. Vol. 56. No. 5. pp. 175–178.

The author has examined six employés from each of three printing presses in Calcutta, and has detected several cases of colic, pains in hands and feet, blue line, and changes in the blood, besides other symptoms less characteristic of lead poisoning. He points out that the statistical data are vitiated by the fact that printers with neuritis give up their work and are no more seen. Lead is absorbed through the lungs from the dust, containing lead and antimony, which is raised by dry sweeping ; through the skin or erosions produced by using lye to clean the type ; by the gastro-intestinal tract when betel is chewed and food is eaten in the presses ; and by the habit of printers of holding type in their mouths. He says that industrial medicine is almost neglected in India [a reproach which the Editor of the *Indian Medical Gazette* assures us is about to be taken away].

A. G. B.

Siperstein (David M.) & Litman (Morris). **Studies on the Effects of Quinine on the Liver, Blood Cells and Urine of Rabbits.**—*Arch. Intern. Med.* 1921. Apr. Vol. 27. No. 4. pp. 449–456. With 7 figs.

In the course of a series of observations on the excretion of bile pigments after the administration of quinine, J. P. Schneider found that the bile pigments of the duodenal contents were largely increased and that urobilinogen also appeared. This was considered to be an indication of pathologic changes in the liver. Hence the present investigation, in which doses of quinine comparable with those given in clinical practice were administered intravenously to 11 rabbits, 2 being kept as controls. The result was progressive degenerative changes in the liver cells, well shown in the micrographs, increasing with the dosage. There was also, in four rabbits further studied, a moderate transitory polycythemia suggesting a loss of plasma, rendered persistent by repeated dosage, and polyuria. [Cornwall, who studied the effect of prolonged dosage with quinine on rabbits, found changes in the adrenals and kidneys; the liver is not mentioned (see this *Bulletin*, Vol. 15, p. 266).]

A. G. B.

Fisher (Walter). **The Action of Quinine on Pregnant and Non-Pregnant Uterus in the Tropics.**—*Brit. Med. Jl.* 1921. June 18. pp. 891–892.

In the tropics some practitioners advise pregnant women to abstain from quinine; but in 32 years' experience of Central Africa, the author has never known any harm to result from a prophylactic dose of $2\frac{1}{2}$ grains, morning and evening, during pregnancy. He has never known quinine to cause abortion.

Undoubtedly the effect of quinine on the resting uterus is to cause a sort of menorrhagia, but the author thinks that this, too, may be obviated by dividing the prophylactic dose equally between morning and evening.

A. A.

Sollmann (Torald). **The Quinotoxin Myth.**—*Jl. Amer. Med. Assoc.* 1921. Apr. 9. Vol. 76. No. 15. pp. 999–1001.

Some writers, the author states, have attributed the toxic effects of quinine to the formation of a more toxic substance "quinotoxin," or quinicin as it is more properly called. This may be formed from quinine in the presence of free organic acids, and it has been assumed that such a condition would arise in the stomach.

The author finds that there is no occasion to fear toxic effects from such a transformation. "Quinotoxin" is not specially toxic and could not be formed in significant quantities, if at all, in the body. It may develop slowly in prescriptions containing quinine and organic acid, but would be transformed into inactive products. For this reason such solutions should not be used.

The paper contains technical chemical information about quinicine.

A. G. B.

STEPHENS (J. W. W.), YORKE (W.), BLACKLOCK (B.), MACFIE (J. W. S.), COOPER (C. Forster) & CARTER (H. F.). **Have Differential Leucocyte Counts any Value?**—*Ann. Trop. Med. & Parasit.* 1921. Feb. 8. Vol. 14. No. 3. pp. 371–388. With 5 text-figs.

The question raised in the title has been asked before, but, as a rule, on the ground of the interpretation of the several varieties of leucocyte. Here there was no attempt to do more than class them as mononuclear and polymorphonuclear respectively. A differential leucocyte count, the authors remark, can only be of value if (1) the portion of film counted is of the same composition as the rest of the film, or as corresponding portions of the film; (2) the blood issuing from the puncture has the same composition as that in the vessels; (3) the "normal values" of the text-books are correct.

With regard to the distribution of leucocytes on a film, ROGERS states that an excess of polynuclears will be found along the edges and in the distal tags and of lymphocytes in the centre, and recommends transverse counts; DANIELS and NEWHAM, on the other hand, advise counts of central areas.

The authors examined the whole of two small films, ruling them into areas classed as central, transverse, edge, and tongue areas (some of which overlap), and determined the mononuclear percentage for each. It proved to be highest in the central areas and lowest in the tongue areas (45 and 25 in one example), the edge areas giving an intermediate figure (29). The mononuclear percentage found in the edge areas approximates most closely to that in the total film.

They then examined different areas of ordinary large films, the same observer counting 250 leucocytes in different areas of the same film in one series, and 1,000 in another. The results showed irregular distribution of the mononuclears, and it is concluded that it is desirable to confine the counts to edge areas. This experiment and the one that followed showed the inconstancy of the results obtained by counts of 250. In the latter all the six observers made counts and the discrepancies are shown in the tables, the greatest range in the case of the edge areas being 13. This difference might be attributed to the various observers examining different parts of the edge or to different interpretation, and in order to elucidate the problem minute films were made and all the leucocytes present examined by the different observers. Sixteen films were thus examined and in no instance did more than two observers agree. The discrepancies might be due to defective action of the mechanical stage, the tongue-like prolongation of the film making counting here difficult, or damage to the leucocytes, so that a cell considered unrecognizable by one is counted by another. The maximum variation from the actual mononuclear percentage was, however, only four, so that the errors arising from differences of interpretation are small, and the errors of the other experiments are due to different observers examining different leucocytes.

In another experiment successive drops of blood were used, flowing freely from the same puncture, and 500 cells in edge areas were counted by each observer; the result was checked by larger counts. It was found that the result obtained might be as much as eight above or eight below the "true" figure obtained by 8,000 counts, so that differences of 16 in edge counts of 500 do not necessarily mean that

the mononuclear percentage in the various bloods concerned is actually different.

"These preliminary experiments, which deal solely with attempts to determine the mononuclear percentage of the blood of normal persons, suffice, we think, to show that considerable difficulties surround what has hitherto been regarded as a simple matter."

A. G. B.

CLARK (Janet Howell). **The Action of Light on the Leucocyte Count.** —*Amer. Jl. Hyg.* Baltimore. 1921. Jan. Vol. 1. No. 1. pp. 39–62. With 13 charts in text.

After a critical consideration of previous work on the action of light on the blood, the author concludes that exposure to sunlight results in an increase of lymphocytes, but notes that the experiments have all been complicated by the action of heat, and are suggestive rather than decisive. The result of the author's experiments tend in the same direction.

Rabbits enclosed in a box were exposed to the light of an iron arc for one hour at 10 inches, a distance at which there was no heat effect. Only the ears were radiated. The region of far ultra-violet had practically no effect on the absolute number of polymorphonuclears, but produced a very marked lymphocytosis lasting about three weeks; the near ultra-violet had a depressing effect on both classes of cells especially the former; the region between 450 and 650 had a stimulating effect on both, and more particularly the lymphocytes; and the wave length beyond 650 (red and infra-red) had no effect on the blood. It appears that in previous work no attempt was made to study different wave-lengths of light separately.

The interest of these results lies in the fact that experiments have shown that lymphocytosis increases the resistance of mice to tuberculosis and a reduced lymphocyte count lessens that of monkeys to polyomyelitis. ROLLIER has suggested that the beneficial effects of heliotherapy in tuberculosis may be due to the action of the actinic rays in increasing the lymphocyte count.

"If a condition may be obtained in which the absolute number of polymorphonuclears remains practically normal while the absolute number of lymphocytes is greatly increased, as after exposure of rabbits to a bare iron arc, the blood would have normal phagocytic power, together with such increased resistance as may depend upon the peculiar activity of the lymphocytes."

A. G. B.

BHATTACHARJEE (S. R.). **Preliminary Notes on the Use of Tincture Iodine Intravenously.**—*Indian Med. Gaz.* 1921. Feb. Vol. 56. No. 2. pp. 49–55. With 10 charts.

Brief notes of some interesting cases illustrating the results of intravenous injections of iodine. In two cases of mauling by a leopard the wounds were dressed with $H_2 O_2$, and 3 minims of tr. iodi. in 2 drams of water were injected by vein, this treatment being continued until the third day, when the iodine was intermitted in one case for comparison: on the fourth day the less severe case, in which the iodine had been stopped, was doing ill, while the other case had a normal temperature and clean healing wounds. A case of cellulitis with a temperature of 103° F. was discharged cured after treatment for three days with a daily injection of 8 minims of tr. iodi. Ten cases

of syphilis and one of yaws have been quickly and greatly benefited by a few daily injections of iodine. In a case of quotidian malaria the temperature fell to normal after two injections, and remained so for eleven days.

A. A.

Porter (J. W.). **A Plea for the More Frequent Use of Intravenous Medication, with Special Reference to the Use of Iodine.**—*Indian Med. Gaz.* 1921. May. Vol. 56. No. 5. pp. 161–162.

The author pleads for the more frequent use of the intravenous method of medication. He points out that the blood possesses greater resistance to infection than any tissue in the body, and that remedies need not be introduced in high dilution as was formerly believed; e.g., 0·9 gm. neosalvarsan can readily be given with a 10 cc. syringe. He goes on to consider the frequency of leucocytosis in disease—nature's method of dealing with invading organisms, and the value of iodine in increasing leucocytosis, quoting from the literature, for it appears he has not had an opportunity of practising its administration himself. In the form of liquor iodi as much as 4 gr. of iodine may be given by the intravenous route.

A. G. B.

Christopherson (J. B.). **Further Notes on the Intravenous Injection of Antimony Tartrate. Leucoderma and Skin Complications; Administration of Large Doses.**—*Lancet.* 1921. Mar. 12. pp. 522–525. With 2 charts and 2 text-figs.

The author deals with the treatment of kala azar, oriental sore and bilharziasis by antimony. He gives the chart of a Sudanese boy, aged 18, who in 86 days received 87½ gr. of antimony pot. tartrate for verified kala azar. Two years later he was accepted for Government service. The case shows that a considerable quantity of the drug may be introduced into the veins without ill-effect; 3 gr. may be injected every other day for 16 times in 33 days, the doses having commenced at 1 gr. daily. Of the various incidents attending the administration, the author finds the cough, metallic taste and tightness in the chest alone to be frequent. Cough, retching, colic, indicate a need for caution; jaundice and more albumin in the urine than can be accounted for by the disease—danger. A common complication is pains in the shoulder and "lumbago" 4–6 hours after injection, when a total of about 10 gr. has been given. They indicate interference by the antimony with the normal metabolism of the liver and usually pass off. After a total dose of 30 gr. the Arab boy became piebald, a rare complication, which is exhibited in a photograph; a "lichen planus" condition of the skin preceded. These phenomena indicate that the skin is concerned in the elimination of the antimony.

In bilharzia disease less antimony is needed—20–30 gr. suffice; and in oriental sore 5–8 gr. may effect a cure. For none of these diseases is there a fixed curative dose. The author contrasts the amounts of antimony which may be given by the veins and mouth respectively, and draws the conclusion that the blood is capable of standing a large amount of rough treatment. The blood is the logical

route for direct attack upon micro-organic and other diseases. He surmises that the drug penetrates the envelope of the Leishman-Donovan body, just as it does that of the miracidium. In the case of kala azar described the spleen and liver did not go down under antimony alone ; 10 gr. of quinine were therefore given daily for 47 days, after which the enlargement disappeared.

A. G. B.

ALLMAND (Dorothy). **Liverpool School of Tropical Medicine. Scientific Record.**—*Ann. Trop. Med. & Parasit.* 1921. Apr. 27. Vol. 15. No. 1. pp. 1–47. With 9 plates.

The opening of the new laboratories of the Liverpool School of Tropical Medicine is the occasion of this survey, which covers the period from the founding of the school in 1898 to July, 1920. After an introductory section, in which the new laboratories are described and an outline of the school's history is sketched, the scientific activities are recounted under the headings, Malaria and Sanitation, Blackwater Fever, Piroplasmosis, Trypanosomiasis, Yellow Fever, Relapsing Fever and Spirochaetes, Amoebiasis, Beriberi, Helminthiasis, Filariasis, Entomology, Protozoology. Truly a remarkable record of activity, which reflects the greatest credit on the school and its staff.

A. G. B.

GUÉRIN. **L'Assistance médicale dans l'Inde française et l'École de Médecine de Pondichéry.**—*Bull. Soc. Path. Exot.* 1921. Mar. 9. Vol. 14. No. 3. pp. 134–141.

French India consists of the settlements of Pondicherry and Karikal on the Coromandel coast, Chandernagore above Calcutta, and Mahé on the Malabar coast. These have hospitals with a total of 250 beds and a number of dispensaries. There are 20 native health officers, 8 midwives, and 12 travelling vaccinators. Despite difficulties raised by the natives six thousand children are vaccinated yearly. The vaccinators discover the first cases of cholera, for the treatment of which the natives are ready to accept European methods. There is also a leprosery, which cares for 120 lepers. The personnel for all these forms of medical relief is trained at the Native School of Medicine at Pondicherry, which came into existence in 1823. The history of the school is given ; it contains pupils who are to become health officers, vaccinators and midwives. All must be able to read and write French. The course for the health officers is five years. The vaccinators have a two years' training, after which they are examined in minor surgery and practice of vaccination and the diagnosis and treatment of epidemic diseases, especially those most frequently observed in the colony. The training of the midwives lasts three years.

There are three French instructors, one of whom is the director, and two native instructors. In the last ten years there have been 70 students, of whom 40 have obtained diplomas and five are continuing their studies in France. Twenty vaccinators and 17 midwives have qualified. The diplomas are accepted for practice in British India.

A. G. B.

FONTOYNONT. **L'École de Médecine indigène de Tananarive.**—*Presse Méd.* 1921. Feb. 26. No. 17. pp. 294–297.

This is an address given by the Dean of the Native Medical School at Tananarive, Madagascar, on its 25th anniversary.

The school was founded by General GALLIENI in 1896, the year following the occupation of the capital by the French, and it formed the model for the later schools in Indo-China and West Africa. It has granted 336 medical diplomas, but 56 of these were to old practitioners in order to regularize their position; it is now regretted that the old doctors received the same diploma as the new, as these suffered in public esteem. After an examination the young Malagasy enters a school which is preparatory for the School of Medicine; a year later a second examination admits to a year of probation at the Medical School, after which the student enters on the four years' course of studies.

In 1899 a native medical staff was organized, and in this all the doctors trained in the school have to serve for a period; the numbers are at present insufficient to supply the whole country, but quality has been considered rather than quantity.

The school trains midwives also, and of these 208 have been turned out. In the great influenza outbreak in 1919, 15 of the native doctors lost their lives. In the war 18 were mobilized and did excellent service.

A. G. B.

PORAK (René). **L'École de Médecine de Téhéran.**—*Presse Méd.* 1921. Aug. 13. No. 65. pp. 1173–1175.

The author was appointed by the Persian Government to teach clinical medicine at Teheran. When he reached Persia he found nothing but a lecture hall. He remarks that at the Teheran School of Medicine anatomy is taught without dissection, physiology without experiment, and pathology without the examination of the sick. The Germans built a fine hospital; this was taken over by the English and the French have no access to it, a condition to which the Persian professors have accommodated themselves. He notes also that though there are primary schools in Persia where French is taught no secondary school exists, so that there is no basis of instruction to build on. After eight months' effort he was promised a hospital by the Persian Government and he has returned to France to gain aid for his schemes.

A. G. B.

SERGENT (Edmond). **Rapport sur le fonctionnement de l'Institut Pasteur d'Algérie en 1920.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1921. Mar. Vol. 1. No. 1. pp. 127–139.

Of the 5,617 analyses, chiefly microbiological, 221 were veterinary; 2,518 persons received anti-rabies treatment.

The meteorological conditions of the winter and spring fortunately mitigated the malaria, for the high cost of labour made it necessary to suspend prophylactic measures in three villages. Three thousand persons received quinine regularly, the drug being distributed by 22 agents. An account of the campaigns in progress is given.

The units or doses of vaccines and serums reached 2,840,000, the majority of which were anti-smallpox and anti-sheep-pox vaccines.

A. G. B.

Medical Journal of Australia. 1921. Mar. 12. Vol. 1. 8th Year. No. 11. pp. 218–219.—**The Walter and Eliza Hall Institute of Research in Pathology and Medicine. Annual Report for 1920.**

The Institute, the first year's working of which is here described, has devoted special attention to two main researches : the various problems of hydatid infestation of man and an investigation into the incidence and etiology of acute respiratory affections.

Dr. Hamilton Fairley has studied the value of the complement fixation reaction in echinococcal infections. A series of 481 cases from Victoria, South Australia and New South Wales was investigated ; 53 of these suffered from hydatid disease and 47 (89 per cent.) gave positive serological reactions. No patient unaffected by hydatid was positive. Observations indicate that, unless a second cyst be present, the reaction disappears within three months of a successful operation. If this is confirmed, the surgeon has a valuable test of cure. The value of antimony in treatment has been tried on a few hospital patients, with disappointing results. The drug apparently fails to reach the incapsuled parasite. The work is being continued.

Fairley and Dew have commenced a series of studies on malaria, the dysenteries, and the pathology of human bilharziasis, for the purpose of which 150 blocks of tissue were brought from Egypt. Other researches are briefly described.

A. G. B.

Uganda Protectorate. **Annual Report of the Bacteriological Department for the Year ended 31st December, 1920.** [Duke (H. Lyndhurst), Bacteriologist, Uganda Protectorate.]—20 pp. with 1 folding plan. 1921. Entebbe : Printed by the Government Printer. [Price not stated.]

After reference to the allocation of duties among the small staff and to the experimental animals available, the author describes briefly malaria among the laboratory monkeys ; the appearance of the parasites suggested those described by Knowles [this *Bulletin*, Vol. 15, p. 261]. Malaria with rigors and rise of temperature occurred in a captive chimpanzee, but the parasitology could not be properly followed up.

In Part II is a description of the examinations performed. Of 695 *Glossina palpalis* dissected on Damba island one had trypanosomes in the salivary glands. In feeding experiments one of four monkeys, on which 3,029 flies caught on the lake shore near Entebbe fed, developed the lake-shore trypanosome. Infection occurred three times with wild Damba flies, 440, 1,054 and 310 having fed. A worm and a fungus found in *G. palpalis* are briefly described.

Agglutinating rabbit sera have been prepared against various organisms, according to the procedure of Chick and Dalyell. High titre sera were invariably obtained and kept their potency amid unfavourable circumstances. The Flexner type of dysentery bacillus was recovered from native stools on several occasions, but not Shiga nor *E. histolytica*. Duke writes—" Of epidemic diseases, other than venereal, plague and smallpox are the principal enemies of the Uganda native." There is at present no evidence that enteric fever occurs in undisturbed native communities.

Part III deals with Arneth and differential counts, the results of which are expressed in tables occupying several pages. In making blood counts Duke notes that he neglected the ends of the smear and he defines what he means by large mononuclears. The average Arneth index for 11 Europeans, 13 Indians and 9 Baganda, all apparently healthy, was 62·1, 65·6 and 59 respectively; malaria caused a shift to the left in Europeans and Asiatics, but not necessarily in Baganda. A persistent shift to the left is a usual sign that the subject's health is impaired. Typhoid fever in the native caused a shift to the left. Some inconclusive experiments were made on the effect of administration of cocaine or quinine on the numbers of the large mononuclears.

Part IV, dealing with the preparation of vaccine against smallpox, will be treated elsewhere.

A. G. B.

Flu (P. C.). [In Dutch and English.] **Verslag over de werkzaamheden aan het Geneeskundig Laboratorium te Weltevreden gedurende het jaar 1919. Report on the Work done at the Geneeskundig Laboratorium at Weltevreden in 1919.**—*Mededel. Geneesk. Lab. Weltevreden.* 1920. 3rd Series A. Nos. 10, 11 and 12. pp. 398–473.

The routine work carried on at the laboratories included diagnostic tests of all sorts, serological, bacteriological, microscopical, etc., water examination, and chemical and histological examinations, and autopsies.

Four fatal cases of acute intestinal trouble, diagnosed variously as peritonitis and suspected cholera, baffled investigation and were finally, by exclusion, conjectured to be due to malaria.

A great deal of experimental work seems to have been done, the investigations including plague immunization, ankylostoma and other helminth problems, filtration of water, the biological processes of the septic tank, the radio-activity of therapeutic springs, and the value and the vitamine-content of various foodstuffs. The following conclusions of the last-named subject of inquiry are of interest:—

"Boiled potatoes, though insufficient in anti-beriberi vitamins, are richer than washed, polished rice. Tapioca flour is very poor in vitamins, much poorer than dried cassava-root and sago. Monkey-nuts and soya beans and other local legumes are rich in vitamins, as also is canary-seed. Maize is rich in vitamins, but they are often lost in the preparation of maize flour. Australian milk-powder packed in tins contained a high percentage of fat-soluble vitamins, but not when packed in cardboard. The natives of large towns of Netherlands India eat chiefly polished rice, and though they may not actually suffer from beriberi, it is probable that the resulting deficiency of vitamins plays a considerable part in the high mortality of these towns.

The question of tuberculosis was taken up, for, contrary to the general opinion held up till recently, it now appears that tuberculosis is responsible for many deaths among all classes and races of the population. Infection from cattle cannot be common in Java, since the natives do not use cow's milk much, and tubercle has seldom been observed in buffaloes, which are the bovines with which the native comes most in contact.

A. A.

JAVA. **Jaarverslag van het Centraal Militair Geneeskundig Laboratorium over het Jaar, 1919.** [Central Military Medical Laboratory Report for 1919.] [BRUG (S. L.), Director.]—51 pp. 1920. Batavia: Javasche Boekhandel & Drukkerij.

After a description of the laboratory staff and the facilities at its disposal, the report gives a detailed account of the work done in the department of clinical tropical pathology.

Among other work of interest, the relations of "tropica" to tertian infection was found to be the same in 1918 as in the preceding year, 60 : 40.

In scientific research an attempt was made to adapt BAERMANN's method for determining hookworm larvae in soil to the examination of faeces [see this *Bulletin*, Vol. 12, p. 181].

An investigation as to the use of rice-bran pills in the treatment of beriberi proved that, with ordinary diet, 10 "Dedek" pills three times a day, representing the alcoholic extract of about 70 gm. of rice-bran from 1 kg. of unpolished rice, together with katjang idjoe (*Phaseolus radiatus*) twice daily, were very efficacious in the treatment of beriberi, and also promised to be useful as a prophylactic when unpolished rice was unobtainable.

Further experiments were made to determine whether *Culex fatigans* was a possible carrier of *Filaria bancrofti*. It was found to be quite competent as such when well fed. The rarity of filariasis in Batavia is therefore not due to the absence of a competent carrier, and is still unexplained.

S. L. BRUG, in his researches on intestinal parasites in persons without intestinal symptoms, prefers repeated examinations (three at least) to concentration methods, except to diagnose slight worm infections. The diagnosis of slight worm infections is less important than protozoal ones, because worms multiply outside, protozoa inside, the body. He concludes that about 25 per cent. of the soldiers examined are *Entamoeba histolytica* carriers [but see this *Bulletin*, Vol. 18, pp. 34–35]. Several tables illustrate his findings, the one (No. III) comparing the findings of DOBELL, MATTHEWS and Malins SMITH, and BIJLSMA after repeated examinations for *histolytica* being particularly interesting.

J. Campbell Graham.

BOUFFARD (G.). **De la rage canine en Afrique Occidentale Française.** —*Bull. Soc. Path Exot.* 1921. Jan. 12. Vol. 14. No. 1. pp. 6–9.

Mad dogs have been known for a long time in French West Africa. These dogs have from time to time bitten man, but man himself has never contracted rabies. No case can be found in the records, nor do the chiefs know of any. That the affection in dogs in the Sudan is really rabies was proved by CAZALBOU, as well as by the author. HECKENROTH, who studied rabies in Senegal and saw several cases in man, suggested that there existed two strains, one indigenous, harmless to man, the other of recent introduction and transmissible to him [see this *Bulletin*, Vol. 13, p. 34].

The author, in 1917, in Dahomey, inoculated the medulla of a dog dead apparently of dumb rabies into rabbits and guinea-pigs, which died with typical symptoms, and kept up the strain for 28 passages.

No animal was resistant. Later he had a similar experience with another dog, leading him to the conclusion that though human rabies is unknown, canine rabies exists. He is not convinced of the truth of HECKENROTH'S hypothesis, and hopes to compare the indigenous with the European virus in France.

A. G. B.

REMLINGER (P.). **La durée du traitement antirabique peut-elle être écourtée ? Un procédé rapide.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1921. Mar. Vol. 1. No. 1. pp. 45–48.

The argument of this paper is that in the present hard and impoverished times the old protracted method of antirabic treatment might well be shortened; institutions cannot afford it, and patients have no time to spare for it.

It is suggested, therefore, that all patients should be treated somewhat in the rapid manner now followed in grave cases, namely by four injections of desiccated cords daily for five successive days, according to the following formula:—1st day, morning 7–7, afternoon 6–6; 2nd day 5–5, 4–4; 3rd day 4–4, 3–3; 4th day 5–5, 4–4; 5th day 4–4, 3–3. In grave cases three series of injections would be given daily:—1st day, morning 7–7, afternoon 6–6, evening 5–5; 2nd day 5–5, 4–4, 3–3; 3rd day 5–5, 4–4, 3–2; 4th day 4–4, 3–3, 3–2; 5th day 4–4, 3–3, 2–2. In the gravest cases, e.g., bites in the face or wolf bite, the last series of injections would be continued for some days more. To mollify this rapid treatment the injections would be spread well over the abdomen and outer surface of the thighs and the punctures dressed with cold compresses. Some old people and sufferers from organic disease would have to be treated less rapidly.

A. A.

PONDMAN (A.). **Over het immuniseerend vermogen van afgestorven virus fixe.** [On the Immunizing Power of Dead Fixed Virus.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1921. Vol. 61. No. 1. pp. 8–40.

Pondman found at the Pasteur Institute of Weltevreden (Java) that a fixed virus emulsion had died after six months when kept at 8° C., but still had strong immunizing power. After another three months this property had decreased slightly.

Another series of experiments showed that a fixed virus emulsion (1 : 25), with ½ per cent. carbol, died when kept in the incubator at 37° C. for ten days and afterwards at room temperature in the dark for five days. The immunizing power of this emulsion was well preserved.

To reduce the quantity to be injected the author tried an emulsion of 1 : 10 prepared in the same way. This had to be kept after incubation at 37° C. for ten days at room temperature in the dark to lose its virulence. Pondman could immunize rabbits completely with this emulsion after storing it for 4½ months in the dark; the rabbits were saved by treatment in this way after intracerebral injection of street virus.

This is a severe test of the endurance of the vaccine, and the author thinks that it will be possible in future to commence the antirabic treatment at virus depots on the other islands of the Dutch Indian Archipelago if there should be any delay in sending the patients to the Pasteur Institute at Weltevreden.

W. J. Bais.

Stimson (A. M.). **Biologic Therapy. XII. Rabies Vaccine.**—*Jl. Amer. Med. Assoc.* 1921. Jan. 22. Vol. 76. No. 4. pp. 241–242.

Dr. A. M. Stimson, dealing with the principles and practice of antirabic inoculation, remarks that in the Hygiene Laboratory of the U.S. Public Health Service the use of long-dried material, presumably inert, is now discontinued; also, while admitting the difficulty of accurately appraising the protection afforded by the Pasteur treatment owing to the general imperfection and insufficiency of the data, he remarks that the general trend of the evidence clearly reveals a specific immunizing effect.

A. A.

Abbatucci. **La toxhémie dans le typhus exanthématique et sa symptomatologie.**—*Bull. Soc Path. Exot.* 1921. Apr. 13. Vol. 14. No. 4. pp. 202–205. With 1 chart in text.

A case of typhus at Beyrout in which, after the initial fever, there was a complete remission lasting three days, and the eruption did not appear till the twelfth day. The post-mortem findings recall to author those he has reported after death from arsenical poisoning.

A. G. B.

Béguet. **Étude de quelques bactéries utilisées pour le sérodiagnostic du typhus exanthématique.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1921. Mar. Vol. 1. No. 1. pp. 49–55.

——. **Note sur quelques bactéries utilisées pour le sérodiagnostic du typhus exanthématique.**—*Bull. Soc. Path. Exot.* 1921. Mar. 9. Vol. 14. No. 3. pp. 142–143.

Of four stocks of germs issued to the author as Proteus X-19 for serum diagnosis of typhus, and giving a positive Weil-Felix reaction in typhus cases and negative results in other cases, three, coming respectively from Paris, Metz and Syria, were of the Proteus group, and one, coming from Constantinople and showing the highest agglutination of all, is not a Proteus, but is an immobile Coccobacillus of a new type and is designated *Coccobacillus byzantinus* by the author.

A. A.

Stevenson (A. C.) & Balfour (Andrew). **Notes on the Histo-Pathology of Typhus Fever.**—*Jl. Path. & Bact.* 1921. July. Vol. 24. No. 3. pp. 289–305. With 3 plates.

The authors have studied the tissues from five fatal cases of typhus fever occurring in the Caucasus. They give a resumé of the more important recent work on the histo-pathological changes and on the occurrence of Rickettsia in the tissues. It is now recognized that typhus is really a systemic disease of the smaller arteries and capillaries, and the vessels of the brain and upper part of the spinal

cord are specially liable to be affected. They discuss the changes found in each type of tissue in their cases, illustrating them in three plates of figures. They found granules which were possibly Rickettsia in the nerve cells of the cerebrum as well as in lung, spleen and liver, but "so many different species of Rickettsia have been found that . . . we confess to having doubt as to their exact nature, let alone their pathological significance." A list of 40 references is appended.

A. G. B.

LINTZ (Joseph). **Elephantiasis with Reference to Syphilis.**—*New York Med. Jl.* 1921. Apr. 6. Vol. 113. No. 11. pp. 535–538.

Three cases of what, it is considered, could definitely be called elephantiasis are here abstracted. There was a history and evidence of syphilis, and improvement under anti-syphilitic treatment was slow but marked. Two of the cases were examined for microfilariae, with a negative result.

The author, who is not satisfied with the filaria theory of elephantiasis, suggests that all cases of the disease should be examined for evidence of syphilis and intensive antisyphilitic treatment tried.

A. A.

PORTER (J. W.). **The Use of Clamps in restraining Haemorrhage during the Operation for Elephantiasis of the Scrotum.**—*Indian Med. Gaz.* 1921. Feb. Vol. 56. No. 2. pp. 41–42.

Three or four days before the operation an intravenous injection of "0·9 novarsenobenzol" is given, which appears to soften and relax the skin of the scrotum almost immediately. The author thinks this extremely rapid result must be due to the instant death of some of the parent worms and the consequent restoration of the lymph circulation. For the next few days the softening of the skin is aided by massage and elevation, soaping and hot baths.

The author does not describe the details of the actual operation, but merely the means adopted to control haemorrhage.

"Three pairs of large clamps, such as Moynihan uses for gastro-enterostomy, or Lynn Thomas for amputation at the hip-joint, are prepared by covering one of the blades with rubber tubing.

"A small incision is made in front near the root of the penis and the unsheathed blade of one clamp is inserted and pushed on towards the perinaeum in the line of junction of the healthy and unhealthy portions of the scrotum. This is quite easy. The blades are then firmly closed, the outer sheathed blade resting on the surface of the skin.

"A similar proceeding is effected on the other side. The skin incisions are rapidly and boldly made as far as the points of these clamps.

"After this, another clamp, both of whose blades are sheathed, is applied across the perinaeum by holding the scrotum forwards, and the mass is cut away.

"There has been, in this way, practically no bleeding, and, after the usual accompanying hydroceles have been dealt with, the vessels are picked up and tied.

"Those which can be seen are dealt with first, and then by loosening the clamps, the smaller ones become evident. The operation is completed in the usual manner."

A. A.

Mackenzie (J.). **Influenza : Preliminary Note on a Fatal Pneumococcal Infection and its Suggested Spread from Sheep to Man.** —*Jl. Roy. Army Med. Corps.* 1920. Dec. Vol. 35. No. 6. pp. 481–484.

In October 1919 a severe epidemic of " influenza " broke out among corps of Indian followers in Lahore cantonment, remarkable in that it was the only sharply defined epidemic of the kind in that year in India and that it was restricted to the north end of the cantonment. Up to November 19 there were 689 admissions and 196 deaths. On that date the author learned that sheep penned in the northern part of the cantonment were dying in numbers of a mysterious malady, and he remarks that the unit nearest the sheep pens consisted of the personnel of the cattle depôt itself, and in this unit cases were very numerous. It is noted that after September the main road which parted pens and cantonment was thick with dust, which must have blown from one to the other. The infection of a unit a mile away could be explained by the employment of a fatigue party of 52 men to erect sheep pens a fortnight before the unit figured on the returns.

A post-mortem of a sheep showed pneumococcal bronchopneumonia, with Gram-positive capsulated diplococci indistinguishable from Fraenkel's pneumococcus in lungs and heart blood, and post-mortems of two unselected human cases revealed bronchopneumonia with pneumococci in the lungs and blood. The author suggests that a type of pneumococcus, rendered highly virulent by passage through sheep had either grafted itself on to mild influenza or itself produced the fatal type of disease described, but admits that the investigation was far from complete.

A. G. B.

Abbatucci. **Considérations cliniques sur l'épidémie de grippe de 1918–1919 observée à l'hôpital de Fez (Maroc).**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1920. Dec. Vol. 18. pp. 76–80.

The predominant clinical form of the disease in this epidemic of grippe was the pulmonary, without stethoscopic signs, but with fever and pain and often a sooty sputum. Among complications pleurisy and suppurative pericarditis occurred. An interesting phenomenon during the epidemic was the frequency of liver abscess, as if the influenza had actually made things favourable for the specific amoeba. These amoebic abscesses were difficult to diagnose. The author remarks upon the long time—up to two months—that the contagion of influenza remains active.

A. A.

Greig (E. D. W.). **Observations on the Pathology and Bacteriology of Influenza.**—*Indian Jl. Med. Res.* 1920. Oct. Vol 8. No. 2. pp. 326–355.

The author made necropsies on 60 cases of fatal influenza among Indian troops during the height of the second influenza wave at Karachi in the autumn of 1918, and in this paper, which was read at Paris by Col. Greig as delegate for the Government of India to the *Commission Sanitaire des Pays Alliés*, the pathology and bacteriology of the disease are studied with references to work in America. The author found that the pathological lesions in the respiratory system

took the form of an acute bronchiolitis without serious involvement of the pleura, such as empyema. Other serous membranes, viz., the pericardium and peritoneum, were not attacked. The organisms associated with the lesions were *B. influenzae* and the pneumococcus. No part was played by the haemolytic streptococcus in the causation of the disease.

A. G. B.

Dutton (H. R.). **Note on a Recent Outbreak of Influenza.**— *Indian Med. Gaz.* 1921. Feb. Vol. 56. No. 2. p. 56.

The outbreak, which comprised 82 cases, occurred in the Bhagalpur Jail, in October, 1920. The noteworthy points are that the early cases were mild, severe chest cases not occurring until eight days after first appearance of the disease; that gradually increasing injections (1 cc. up to 3 cc.) of vaccine appeared to have great curative effect in broncho-pneumonic cases; that general prophylactic inoculation of vaccine proved of great value, no case having occurred after the second dose and only one after the first; and that uncomplicated cases were quickly cured with sodium bicarbonate and cinnamon, and open-air treatment.

A. A.

Melhorn (K. C.). **Smallpox in Haiti.**— *U. S. Nav. Med. Bull.* 1921. Apr. Vol. 15. No. 2. p. 492.

Alastrim (West Indian modified smallpox), having recently been introduced from Jamaica, is now epidemic in Haiti and is spreading rapidly. No special peculiarities have been observed in the course and symptoms of the disease. When the scabs drop off there is no pitting, only a localized loss of pigment lasting for about four weeks.

A. A.

Brown (C. J.). **Smallpox in Port au Prince, Haiti.**— *U. S. Nav. Med. Bull.* 1921. July. Vol. 15. No. 3. pp. 695–700. With 12 figs.

The chief interest of this epidemic is that, though there were many severe cases and the mortality in hospital was 9 per cent, it appears to have been introduced from Jamaica at a time when (Aug., 1920) the type of disease there was alastrim [see this *Bulletin*, Vol. 17, pp. 248–9]. The original case left Jamaica in August, touched at Cuba, entered Haiti on August 20, and reached Port au Prince six days later [the date of onset is not given]. Since then 3,059 persons have been under treatment. The first cases were mild, but as time went on they gradually increased in severity, and the mortality-rate slowly but steadily rose. An account of the disease is given with several photographs; it appears to have been typical smallpox. Patients were vaccinated at various stages, and it is concluded that "a patient is immune to cowpox from the beginning of the eruption to the end of desquamation."

A. G. B.

DE KORTE (W. E.). **What is Amaas ?** [Correspondence.]—*S. African Med. Rec.* 1921. June 11. Vol. 19. No. 11. p. 219.

The author writes :—

" If a hanging-drop preparation of the contents of a varicella vesicle and a similar preparation of an amaas or smallpox vesicle before maturation be examined side by side under the microscope, a very marked difference between the two will be observed, so much so that the diagnosis of the two diseases may be made by microscopic examination alone. In the case of the contents of the varicella vesicle the hanging drop will show a transparent medium, in which will be observed a few extremely motile transparent amoeboid bodies. In the contents of the smallpox or amaas vesicle a great number of highly refractile circular elements about the size of red corpuscles will be obvious. The two pictures are so different as to render any error or confusion almost impossible."

A. G. B.

LEAKE (James P.) & FORCE (John N.). **Inoculation of Alastrim or West Indian Smallpox.**—*Proc. Soc. Experim. Biol. & Med.* 1921. Apr. 20. Vol. 18. No. 7. pp. 248-249.

—— & ——. **Experiments on Alastrim.**—*Public Health Report.* 1921. June 24. Vol. 36. No. 25. pp. 1437–1443.

Accounts of alastrim usually state that the disease is most prevalent among negroes, and tends to " involve the more superficial layers of the skin in the vesicular stage, with relatively little primary umbilication, streptococcal infection, severe pustulation, or permanent scarring."

" Comparisons of its clinical immunology with that of accepted smallpox have been obscured by the non-recognition of three facts : the acceleration of the reaction to inoculation of vaccine virus to immune individuals, the frequent absence of complete immunity to vaccine virus after an attack of smallpox [62 per cent. vaccinias and vaccinoids were produced by FORCE and STEVENS on vaccinating young adults who gave a history of previous smallpox] and the occasional absence of immunity to smallpox after successful vaccination or after an attack of smallpox itself."

The authors performed inoculations to determine the immunological relationship of alastrim. The material consisted of pustule contents preserved in 0·5 per cent. phenol at a low temperature for several months, from two Jamaican cases, and crusts preserved dry for two weeks from a case in Haiti. The subjects were two *Macacus rhesus*. The result of the first experiment was that :

" A vesico-papular eruption was produced by the inoculation of two monkeys with crusts from Haitian alastrim and pustule contents from Jamaican alastrim. This eruption was similar to that produced in three monkeys some months previously, inoculated by one of the authors (J. P. L.) with pustule contents from a case of smallpox occurring in the district of Columbia."

Thirteen days after the inoculation with alastrim material, monkey 1 and a control were inoculated with a highly potent vaccine virus, and monkey 2 with alastrim material. The latter gave no reaction ; the control showed a typical vaccinia ; monkey 1 was refractory. In a third experiment the alastrim material was inoculated cutaneously on a rabbit without result ; nine days later the rabbit was inoculated with scrapings from the eruption produced in the monkey, and after other nine days with dilution of a potent vaccine virus ; only a few scattered

lesions were produced, though there was a confluent eruption on a control rabbit. The experiment was repeated on another rabbit with the same result.

"Two rabbits were therefore immunized to alastrim to such a degree that, though they showed no eruption, they were later observed to be almost completely immune to vaccine virus, the scanty lesions being in no sense imperfect in development but definitely accelerated, as in vaccinoid."

In a final experiment rabbits previously inoculated with vaccine virus gave positive intracutaneous reactions to smallpox crusts, alastrim material and vaccine virus, but remained negative to chickenpox crusts.

The paper concludes with the statement :—

"The fact that definite immunity to vaccinia is produced by previous inoculation with alastrim is additional evidence of the essential identity of alastrim with smallpox."

A. G. B.

Braafladt (Louis H.). **Blastomycosis.**—*China Med. Jl.* 1921. Jan. Vol. 35. No. 1. pp. 30–35.

The author after an introductory review of the subject, gives abstracts of two cases of blastomycosis, one pulmonary, the other affecting the mammae. The bacteriological and microscopic characters of the infecting organism are described.

A. A.

Lozada Benavente (Samuel). **Contribución al estudio de la blastomicosis.**—*An. Facul. de Med. de Lima.* 1920. Sept.–Oct.; Nov.–Dec Vol. 6, Nos. 17 and 18. pp. 109–121. With 12 text-figs. pp. 232–249. With 2 plates.

The writer quotes Sagarnaga's opinion that the woody territory of Bolivia lying between the eastern watershed of the Cordillera and the frontiers of Peru, Brazil, Paraguay and the Argentine, is the cradle of most South American tropical disease and especially of blastomycosis. His own experience of blastomycosis has been gained in this country. He divides the clinical course of the disease into four periods, each of which he describes in detail.

Discussing the etiology of this form of blastomycosis, the writer suggests that a vector (unknown) may be concerned in its spread. He points out that the initial lesion is on exposed parts of the body and that the disease is not easily contagious, though auto-inoculation may result from scratching.

Diagnosis is made from leishmaniasis by the discovery of the causal organism and from syphilis by the absence of the Wassermann reaction, and by the fact that arsenic, mercury and iodides are useless in treatment. Syphilis tends to attack the hard palate, blastomycosis the soft palate. Finally, in 17 cases the writer has obtained a positive tuberculin reaction to which he attaches importance.

The disease is curable in the first stage by antiseptic treatment, though excision is to be preferred. The later stages are treated by intravenous injections of tartar emetic, starting with small doses and increasing these up to the limit of tolerance and then gradually decreasing. The treatment should be continued for at least a year after the cicatrization of the lesions.

J. Rosslyn Earp.

Castellani (Aldo), Douglas (MacKenzie) & Thomson (T.). **Notes on Certain Forms of Bronchitis clinically resembling Tuberculosis: Bronchohemisporosis, Bronchomoniliasis, Bronchoanaeromycosis.** —*Jl. Trop. Med. & Hyg.* 1921. June 1. Vol. 24. No. 11. pp. 149–152. With 11 figs.

Remarks on Bronchohemisporosis, Bronchomoniliasis, and Bronchanaeromycosis, affections mostly occurring in the tropics, but not uncommon in the temperate zones, and simulating phthisis.

Bronchohemisporosis is due to fungi of the genus *Hemispora*. In the mild type there is cough and muco-purulent expectoration, but not any fever; the severe type, which sometimes develops after a tonsilitis caused by the same fungus, closely resembles phthisis.

Bronchomoniliasis is due to fungi of the genus *Monilia*, of which the author enumerates four probably pathogenic species not always easy of determination unless the material be fresh. Here again the mild type is accompanied merely by cough and muco-purulent expectoration without fever, and the severe type closely resembles phthisis. In the diagnosis of this disease it is necessary to remember the existence of merely saprophytic moniliasis which may be present in phthisis and other chronic conditions.

Bronchanaeromycosis is associated with an anaerobic bacillus-like organism, provisionally named *Anaeromyces* by the authors, who place it near *Mycobacterium* and *Corynebacterium* of Lehmann and Neumann and *Nocardia* of Toni and Trevisan. The organism has been isolated in numerous cases of bronchitis contracted in Ceylon, the Malay States, Serbia, Italy, France, and England. The cases are of two kinds, the haemorrhagic type resembling pulmonary tuberculosis, and the muco-purulent type resembling sub-acute or chronic bronchitis. The authors are inclined to regard the organism as pathogenic to man, although, experimentally, it has not proved very hurtful to guineapigs.

The paper is illustrated by two plates.

A. A.

Macfie (J. W. S.) & Ingram (A.). **Bronchomoniliasis complicating Pulmonary Tuberculosis in a Native of the Gold Coast, West Africa.** —*Ann. Trop. Med. & Parasit.* 1921. Apr. 27. Vol. 15. No. 1. pp. 53–58.

Though bronchomoniliasis has been found in many parts of the world, the authors do not think it has been recorded from West Africa. The patient, a man aged 25, was admitted on September 29 with a history of illness, accompanied by cough for at least 18 months. There were areas of dullness over both lungs. Cough was frequent, sputum copious, fever irregular. He died on November 8, as the result of haemoptysis. The first sputum examined had the appearance of saliva containing small particles of macerated bread. A second contained numerous yeast-like cells, from which cultures of Monilia were started on maltose agar and glucose agar. In a third specimen, which contained few Monilia cells, probably as a result of potassium iodide treatment, tubercle bacilli were detected. Post-mortem both lungs were found to be tuberculous. The left lung was collapsed and the pleural cavity partially filled with creamy exudate. In this exudate and in the thickened pleura over the lung, Monilia was present. The organism

belonged to the *Tropicalis group* of Castellani and Chalmers, and closely resembled in bio-chemical reactions *M. nivea*, Cast. (1910). This species produces acid and gas in raffinose, a reaction which the authors were unable to test.*

A. G. B.

de Mello (Froilano) & do Carmo Vás (J. A.). [In Portuguese and French.] **Contribuiçâo para o estudo das aspergilaceas indianas.— Contribution à l'étude des aspergillées indiennes.**— *Arquivos Indo-Portugueses de Med. e Historia Nat.* Nova Goa. 1921. Vol. 1. pp. 43–99. With 5 plates.

A catalogue of the species of Aspergillus and Sterigmatocystis with notes on those identified in the author's laboratory.

A. A.

Young (W. A.). **A Brief Note of the Histology of Goundou.**— *Jl. Trop. Med. & Hyg.* 1921. Mar. 15. Vol. 24. No. 6. pp. 76–77. With 1 text-fig.

The general appearance of sections of a goundou examined by the author were those of a myxoma with scattered ill-defined masses of protoplasm and syncytia having up to 20 and 30 nuclei. The significant embryonic nature of this tissue is emphasized.

A. A.

Watts (R. C.) & Mohamed (S. G.). **Incidence of Gingivitis among the Indian Troops.**— *Indian Med. Gaz.* 1921. Mar. Vol. 56. No. 3. pp. 97–98.

The examination of 300 men taken indiscriminately from Gurkha regiments disclosed 44·5 per cent. with good teeth, 26·5 per cent. with bad, and 29 per cent. with gingivitis. Whatever may have been the bacterial flora to begin with, secondary infection with spirochaetes, streptotriches and vibrions invariably predominated: in 49 per cent. of cases, including some classified as "good teeth," Vincent's spirillum and *Bacillus fusiformis* were present. Amoebae were seen in 3 per cent. and in two out of nine cases had ingested red blood cells. *Trichomonas intestinalis* was found in 0·5 per cent.

Fifteen bad spirillar cases were treated with novarsenobillon (0·45 gm. intravenous, and solution locally), and with the disappearance of the organisms the condition of the teeth improved marvellously in all: in the other four there was no improvement, because a coccal infection—probably the original cause—remained.

The authors refer to recorded cases of badly infected wounds caused by contact with infected teeth.

A. A.

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* In a subsequent note [*Ann. Trop. Med. & Parasit.* Vol. 15. No. 3. p. 285] the authors report that neither acid nor gas is produced in raffinose. They therefore consider the fungus a new species, which they name *Monilia accraensis*. The same organism has been obtained from the sputum of another native.

Michael (W. H.). **Treatment of the "West Indian Chancroid."**—*U.S. Nav. Med. Bull.* 1921. Apr. Vol. 15. No. 2. pp. 412–414.

In the author's opinion this lesion is always syphilitic.

When a man reports with a sore he receives an intravenous injection of 0·6 gm. of arsphenamine, which is repeated at the end of a week. If the man is not seen until the sore has been in existence for a week or more he receives a third or even a fourth dose. Arsphenamine has been used, until recently, because neo-arsphenamine, which is preferable, was not available.

Only two cases of secondary syphilis have developed in the author's district since this routine treatment was adopted, and this confirms the author in his belief that the lesion is syphilitic, because in neither of these cases was the sore diagnosed and treated as such.

A. A.

i. Ravaut (P.) & Scheikevitch. **Lymphogranulomatose des ganglions de l'aine. Fréquence inusitée de cette affection (présentation de pièce).**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1921. Mar. 10. 3rd Series. Vol. 45. No. 8. pp. 310–312.

ii. Ravaut (Paul). **Le traitement de l'affection dite "lymphogranulomatose inguinale subaiguë" par les injections d'émétine.**—*Ibid.* June 16. No. 20. pp. 865–874.

i. In the course of a few weeks six cases of this peculiar affection of the inguinal glands were seen by these authors, who refer it to the subacute inguinal lymphogranuloma described by Professor Nicolas of Lyons, a morbid entity unconnected with syphilis, or soft chancre, or tubercle, or bubonic plague.

An abstract of one typical case is given; a man of 61 years, exhibiting a painless non-inflammatory tumour the size of a pigeon's egg in the left groin. The only lesion visible was a minute ulcer like a burst herpes vesicle, which had appeared a few days after irregular intercourse. This disappeared completely after application of iodine; but 15 days thereafter the swelling in the groin had increased and showed signs of suppuration. The removal of the mass, which included glands and adherent skin and connective tissue, necessitated the dissection of the whole of Scarpa's triangle. Section displayed a remarkably hard fibrous network with relics of gland, infiltrated with serous pus. No parasites were identified in cultures, and ultramicroscope investigations gave no result.

ii. Since the above communication the author has seen thirteen more cases of subacute inguinal lymphogranuloma. In the pus from one of these, he observed macrophages and large amoeboid cells, the latter exhibiting lively movements when warmed, and having much more the look of *Entamoeba coli* than of *E. histolytica*. This observation supplied the wanted clue to treatment, and 15 days after the commencement of emetine injections the patient in this case was cured. Encouraged by this success two more cases of a chronic nature were treated with emetine and were cured in ten and fifteen days; in a fourth case the action of emetine was much slower and less satisfactory, the tumour subsiding but a deep subcutaneous fistula persisting.

The doses of emetine have ranged between 4 and 10 cgm. daily. In the three conspicuously successful cases the beginning of the emetine treatment was followed by an increased discharge, the secretion becoming sanguineous and containing blackish clots and debris of sloughs.

Colonial medical officers who saw the cases were inclined to liken them to climatic bubo, and the author suggests a search for amoebae, and a trial of emetine treatment in that affection.

A. A.

Hutchison (H. S.) & Patel (P. T.). **A Preliminary Study of the Etiology of Osteomalacia in the City of Bombay.**—*Glasgow Med. Jl.* 1921. Apr. Vol. 95. No. 4. pp. 241–255. With 5 charts in text.

Bombay is a good field for the study of the etiology of osteomalacia, since many distinct classes having different habits and social customs and a different dietary live there under the same meteorological conditions and practically the same imperfect general sanitary conditions.

From the records of 7,156 labours in the hospitals for women and children it appears that complications in abnormal labours and complications specifically due to osteomalacia are, respectively, more than six, and more than five per cent. more numerous among Mahomedan women than among the women of all other classes of the community combined.

From a study of the conditions of life of the different classes of the community it appears that the circumstances differentiating the Mahomedan women are lack of fresh air and exercise due to a particularly rigid observance of the purdah system.

There is no reason to think that child marriage and protracted lactation, and no evidence that any dietetic deficiency, are factors of any importance in the causation of osteomalacia in Bombay ; but the more or less sudden onset associated with fever in many cases and the rapid softening of the bones suggest the possibility of an infection.

The authors compare their conclusions with those of Dr. Agnes Scott from her observations in Northern India, which are that the houses wherein osteomalacia occurs are dark, damp, ill-ventilated, usually overcrowded, and for the most part in very insanitary surroundings ; that the disease is not confined to the very poor ; and that women who lead a sedentary and secluded life appear to be those chiefly affected.

A. A.

Kofoid (C. A.). **Hookworm and Amoebiasis in California.**—Reprinted from the *California State Jl. Med.* 1920. Sept. 13 pp.

Hookworm.—Hookworm infections in California are mainly importations from the East, from Mexico, or from the Southern States. The most important centre is among the miners in Amador County, whither infection was brought from the infected mines of Europe. Of 2,747 miners examined, 10·8 per cent. were found infected in one examination. Other investigations revealed 7 per cent. infection among 507 Japanese labourers and 6 per cent. among 154 university students, all but one of foreign origin.

" Investigation made by me in the United States Army of the Psychologic Board's ratings of 10,000 men with and without hookworm, revealed the fact that among able-bodied, healthy men hookworm infection was accompanied by an average drop of twenty-seven points, or 22·3 per cent. in mental rating below that attained by men of the same class in whom no infection was detected."

Evidence of the proneness of hookworm infected men to sickness of various kinds, including pneumonia, is given from the Camp Bowie statistics [this *Bulletin*, 1921, Supplement, No. 2, p. 108]. Conditions in California, climatic and sanitary, are all in favour of the perpetuation of the infection.

Amoebiasis.—This is of even graver importance to the State.

"Amoebiasis is neither tropical nor dysenteric by necessity. It is an insidious infection appearing in acute form as dysentery but may accompany any intestinal disorder, constipation, appendicitis, enterocolitis, or appear in chronic cases as hepatic, pulmonary, or brain abscess, as enlarged spleen resistant to quinine, joint or long bone rheumatism, or as an obscure and rebellious skin infection."

[Are all these forms well established ?]

Evidence is given of the increased percentage of infection in 2,300 American soldiers after their return from France, 12·8 per cent. as against 4·3 in 576 home service soldiers.

[The significance of these figures is lessened by the fact that a similar difference is found in the hookworm percentages, 6·9 and 3·8, for it seems improbable that this was the result of service in Europe.]

The examination was single. Of ex-service men in the University 53 per cent. were found to be carriers : here there were six examinations. The author concludes that there is " abundant evidence that the number of carriers of amoebiasis among the civil population of this country has been greatly increased by the return of the overseas men."

The author detected several cases of familial infection, one of which he cites : a soldier in the Philippines who returned with no history of dysentery in 1908. His house contained modern sanitary conveniences. Amoebiasis was detected in one of his children and on examination of the family it was found that both parents and the three children were all infected.

In 122 men in the quicksilver mines were found 40 per cent. of infections.

A. G. B.

ROCKEFELLER FOUNDATION. **Report on Hookworm Infection Survey and Malaria Survey of Porto Rico. From December 26, 1919, to January 28, 1920.** By John B. GRANT, M.D. 67 pp. With 35 text-figs. No. 7525. 1920. Nov. 13. International Health Board, 61, Broadway, New York City. [Lithographed Report for limited distribution.]

This report contains, besides the section on hookworm and malaria, an account of the public health activities of the island. Under economic conditions it is stated that those of the rural labourers, who constitute 70 per cent. of the population of a million and a quarter, can only be described as precarious. Instances of malnutrition are by no means infrequent. The Bureau of Labour report speaks of investigations in the labourers' homes revealing " the most horrible scenes of absolute misery, caused rather by low wages than by the high cost of living." In the coffee industry the daily wage is barely sufficient to pay the price of one meal. It is noted also that the island is over populated, containing 350 persons to the square mile.

Hookworm was discovered in Porto Rico by ASHFORD at the end of the last century. In 1904 an " Anemia Commission " was appointed to study and treat the disease ; and the work continued till 1910, during which period $243,000 were spent and 287,658 patients treated. Hospitals and dispensaries for treatment were established and the attempt

was made to educate the people in the avoidance of infection and of soil pollution. Work of the kind went on—with less energy after 1910—till an examination of Porto Rico soldiers at Camp Las Casas, in 1918, revealed an incidence of 94 per cent. infection. Hence the present survey, in which ten representative areas were chosen. It is significant that " the first few places in which specimens were examined showed such a high hookworm incidence that it was deemed unnecessary to use either the Kofoid-Barber or the centrifuge techniques of specimen examination. . . . When the infection rate is in the vicinity of 95 per cent. very little can be gained by using the more accurate methods." Of the 2,120 persons examined, 1712, or 80·8 per cent., were found infected. The table shows the details.

The haemoglobin index in 1,071 positive cases was 64·1 per cent., against 70·3 in 157 negative persons. The conclusions of the Hookworm Survey are that, except in urban centres, the incidence in Porto Rico is exceedingly high and that, as a rule, the severity of infection increases in direct proportion to the altitude. " The highest infection percentage is to be found in the coffee districts, where the altitude is high, and where incidentally there are the worst economic conditions to be found in Porto Rico. The problem of hookworm control centres around the prevention of soil pollution," and it is stated elsewhere in the report that on the sugar, coffee and tobacco plantations there is an entire absence of latrine accommodation, and of latrines elsewhere not one per cent. is sanitary.

For the malarial survey a thin blood smear was taken from persons bringing faecal specimens. Of 449 examined, 73, or 16·3 per cent, were found infected (see table). No special record was kept of the types of parasites, but *P. vivax* predominated.

Area and District.	Examined for Hookworm Disease.	Found Positive.	Examined for Malaria.	Found Positive.
		p. c.		p. c.
Total	2,120	80·8	449	16·3
Coast District (Sugar)	646	82·0	212	31·1
Valley District (Tobacco)	462	83·8	90	5·6
Mountain District (Coffee)	761	97·5	147	1·4
Coast District San Juan (Urban).	251	21·1	—	—

A. G. B.

Salm (A. C.). **La maladie des oedèmes à Java.**—*Bull. Soc. Path. Exot.* 1921. June 8. Vol. 14. No. 6. pp. 333–337.

This disease was first noticed in the villages in 1918, and in 1919 several patients sought admission to hospital for it, chiefly because of scarcity of food. In three months, of 600 admissions 137 were cases of oedema. In 87 instances it was not possible to attribute the condition to ankylostome infection or any known disease, and of the 87, eight recovered, 12 were in fair condition at the end of three months and 47 had died. The disease occurs in both sexes at all ages. The oedema appears at first on the feet and lower limbs—later elsewhere. The genital parts are often greatly swollen. Emaciation, almost always present, is masked by the oedema. The skin is dry and the nails lose their gloss.

The knee-jerks are normal and no paralysis has been seen. At autopsy the organs are found atrophied. Death, when it occurs, is with extreme enfeeblement and diarrhoea.

The disease is due to defective diet. Van Langen found that there was a lack of the lipochrome, lutein, in the blood, and a great deficiency in fat. He attributes the disease to a lack of fat in the dietary. From the beginning of 1917 rice rose in price for various reasons attributable to the war, and the Javanese were driven to less nutritious foodstuffs, such as manioc. Since then there have been epidemics of influenza and cholera, the result of which was to aggravate the poverty as well as to send up the mortality-rate. In 1919 this was 45·6 per mille. The number of persons with oedema is now decreasing.

A. G. B.

Vampré (Enjolras). **Dois novos casos de mal de engasgo.** [Two New Cases of "Mal de engasgo."]—*Bol. Soc. Med. e Cirurg. de S. Paulo, Brazil.* 1920–21. Oct.–Feb. Vol. 3. 2nd Ser. Nos. 8–12. p. 326.

——. **Nova contribuição ao estudo do "Mal de engasgo."**—*Ann. Paulist. Med. e Cirurg.* 1921. Feb. Year 9. Vol. 12. No. 2. pp. 25–38.

The condition known locally in Brazil as "Mal de engasgo," literally "choking disease," appears to be identical with that more generally denominated "idiopathic dilatation of the oesophagus." The author discusses at considerable length the morbid anatomy of the complaint and argues that the oesophageal dilatation is secondary to a condition of spasm of the cardia. That there is no primary atony of the oesophagus is shown by the fact that in these cases the radioscopic screen reveals vigorous attempts at peristalsis on the part of the oesophageal musculature. The disease, which appears to be common in the Brazilian States of São Paulo and Minas, and in parts of Mexico, is characterized by the onset of severe post-sternal pain after the ingestion of food and ultimate regurgitation of the whole or part of the ingested meal. The etiology of the complaint is obscure. The use of waters containing arsenic or copper has been suggested as a cause, but the author is inclined to attach more importance to the habitual swallowing of scalding coffee. He cites two cases in which marked improvement was brought about by operation having as its object enlargement of the oesophageal opening through the diaphragm.

F. S. Arnold.

Cazamain (Pierre). **Fièvre par morsure de chien.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1921. Mar. 3. 3rd Series. Vol. 45. No. 7. pp. 268–273.

The patient, a sailor aged 21, was bitten on the hand by an enraged dog, whether infected with rabies or not is unknown. He underwent a course of Pasteur treatment lasting a month. Five weeks after the bite, when he had rejoined his ship, the wound became painful and opened, and the epitrochlear and axillary glands enlarged; later there was a scattered macular eruption and fever of recurrent type; no haematozoa

could be detected; quinine was ineffective; the Wassermann was negative. It was concluded that the case was one of spirochaetosis of sodoku type. He received two injections of neosalvarsan and a month later appeared to be well. The author reminds us that sodoku has been communicated by the cat, the weasel, the ferret and the squirrel, and sees no reason why the dog should not play the same part; he calls it, however, dog-bite fever rather than sodoku.

A. G. B.

REVIEWS.

VAUGHAN (Warren T.). [M.D.]. **Influenza: An Epidemiologic Study.**—*Amer. Jl. Hyg.* Baltimore. Monographic Series. 1921. July. No. 1. 260 pp. With 29 charts and 7 text-figs.

There are many problems in connection with epidemic influenza which still await solution. Is this the same disease (in a more intense form) as that common ailment, the "influenza cold"? What is the relationship of Pfeiffer's *Bacillus influenzae* to each of these conditions? If the diseases are due to the same pathogenic agent, why does the endemic pass into the epidemic form, or extend into a great pandemic at uncertain intervals of time? What is the mode of transmission of the disease? Can a positive clinical diagnosis be made in the absence of confirmation by the bacteriologist? So protean, indeed, are the morbid conditions included under the same name that one might multiply these perplexing questions almost indefinitely.

The identity of the micro-organism, to the effects of which influenza is due, was almost universally admitted until the great pandemic of 1918-20 aroused a general interest in, and a more critical attitude towards, the matter. In the spring of 1918, when influenza in epidemic form was diagnosed in many parts of the world in quick succession or simultaneously, a large proportion of most of the civilized nations, both men and women, young adults and the middle-aged, were mobilized for service of one sort or another in the war. There were ample and well-equipped medical organizations almost everywhere, and the moment seemed to be a favourable one for settling, once and for all, the question of the nature of epidemic influenza. At this time, too, certainly in India and in China there occurred, together with what appeared to be influenza, a good many cases of dengue, a disease the clinical resemblance of which to influenza is well known. In the diagnosis of both diseases, much stress is laid upon the shortness of the incubatory and of the febrile periods, the pains in the limbs and back and the subsequent intense depression which seems out of all proportion to the objective signs. The correct diagnosis of these cases became of the greatest importance. It was therefore decidedly disconcerting when so many negative reports were received from the bacteriological laboratories as to the presence of *B. influenzae* in material sent from cases which had been considered clinically to be examples of influenza.

The uncertainty of animal inoculation; the negative result of many experiments made on the direct infection of man from man; and the difficulty, or even impossibility, of demonstrating *B. influenzae* in a considerable proportion of the cases examined, incline one to turn to other methods of attacking the problem of the true nature of epidemic influenza. Hence, such studies as the one under review are particularly welcome. Although Dr. Vaughan's monograph professes only to be a study of influenza from the epidemiological standpoint, he takes a very broad view of the subject, and, directly or indirectly, deals with most aspects of the disease, and gives answers to several of the questions propounded above.

After an interesting review of the earlier recorded epidemics, in which such evidence as exists as to the nature of the disease is briefly given, Dr. Vaughan deals, in considerable detail, with the influenza epidemics which have occurred during the last thirty years. In the epidemics which prevailed in the years following 1889, it is well known that the disease was particularly fatal to middle-aged and elderly persons. In the latest pandemic of 1918–20, the common type of the disease appears to have undergone a considerable change. When it first appeared it was of a very mild character. This, however, was followed in the autumn of 1918 and the early part of 1919 by a very severe form, and one in which the chief sufferers were young adults.

In America, during the four autumn months of 1918, 338,343 cases of influenza (presumably in the army alone) were reported to the Surgeon-General—one out of every four men in the camps had influenza. Again, one out of every twenty-four men encamped in America had pneumonia;

and, among the troops in that country, one out of every sixty-seven died. Between September 1st and December 31st, 1918, it is estimated that about half a million deaths from influenza and its direct complications occurred in the United States.

Dr. Vaughan informs us that "among the Esquimaux in Alaska the death-roll was terrific. Whole villages of Esquimaux lost their entire adult population. . . . Many infants were frozen in their dead mothers' arms." It is impossible to ascertain how heavy the mortality was in India, China, and the "silent areas" of Central Asia. In the former country the estimate of five million deaths from influenza and pneumonia is certainly not an exaggerated one.

When one contrasts these appalling figures with the relative mildness of former epidemics of influenza, it is difficult to avoid doubts as to whether one is considering the ravages of the same disease. To attempt to explain the difference in virulence by differences in susceptibility or by the concurrence of other secondary infecting micro-organisms seems to be a pure assumption, and not in any way a satisfactory solution of the difficulty. On this point, Dr. Vaughan gives several quotations from various authorities, but leaves the matter undecided, at least in the mind of the reviewer.

As regards the original source or sources from which the great pandemics of influenza have started in the past, there has been much conjecture. Certainly, in some cases, epidemiological evidence seems to confirm the general impression that the disease began in the east, and travelled in a westerly direction. In the latter part of the last century, the epidemics in England were popularly called the "Russian" influenza; and there is some reason to believe that China has sometimes been the focus from which epidemics have arisen. Dr. Vaughan considers that the universal pandemic of 1918 probably originated in the United States; that it was carried by troops of the American Expeditionary Force to France; that it spread thence throughout the world; and that the severe recrudescence in the autumn of the same year, in the United States, was due to a reimportation into that country by troops returning from Europe. He admits, however, the possibility of another origin, either in France or in China. The charts which he gives certainly lend considerable support to his opinion. But it must be remembered that, on account of the war, the reports from many parts of Europe and Asia are very incomplete.

At the end of January, 1920, when the recurrent epidemic was at its height in Boston, Dr. Vaughan, assisted by another physician and by thirteen "trained social service workers," made a sickness census of 10,000 inhabitants. Six districts in the city were selected, the inhabitants of which were regarded as representatives of six different economic and social groups, from the overcrowded and very poor to the well-to-do and moderately wealthy classes. Statistical data of each individual, his economic status, the sanitary state, etc., of the dwelling were recorded, together with particulars of all cases of illness during the 1918–19 or the 1920 influenza epidemics, or during the intervals. All these records were reviewed by the author, who returned for correction obvious inaccuracies, or any concerning which further information was required. As the result of this searching inquiry a quantity of information was obtained on such points as the actual morbidity, its relation to sex, age, occcupation, original nationality in the case of emigrants, mortality, the effects of overcrowding, domestic cleanliness, etc. The inquiry seems to have been conducted with great thoroughness and ability, and the results recorded cannot fail to be of much value to all epidemiologists.

Dr. Vaughan quotes the statement made on influenza by Parkes, in Reynolds' "System of Medicine," 1876, that "on the whole it seems clear that, while persons seldom have a second attack in the same epidemic (though even this may occur), an attack in one does not protect against a subsequent epidemic. Indeed, it has been supposed rather to render the body more liable." As the result of his own investigations in Boston, he finds that "a previous attack, contracted on an average 10 to 17 months

before, conferred no protection whatever against a second attack. On the contrary, the attack-rate was slightly higher in this group than in those who had not previously had the disease."

In the final section of his monograph the author discusses the control of epidemic influenza. As regards prevention of influenza in a community he admits frankly that this is at present impossible, but a good deal can be done to minimise the spread and severity of the disease. There is nothing particularly novel in any of the recommendations made. One can only have recourse to such measures as the education of the public in the nature of influenza, the desirability of the avoidance of crowds, attention to personal hygiene, and so forth. A considerable measure of success, both in America and in other parts of the world, seems to have attended the use of multivalent vaccines.

We congratulate Dr. Vaughan on this excellent study of influenza. The facts are so clearly and attractively laid before one, and are considered from so many points of view, that this monograph will be of the greatest interest to many others besides professed epidemiologists. We notice that Dr. Vaughan's study is No. 1 of the Monographic Series issued by the *American Journal of Hygiene*. If subsequent numbers attain the high standard of this one, the success of the series should be assured.

H. J. Walton.

Daniélopolu (D.). **Le typhus exanthématique.**—512 pp. With 5 coloured plates and 91 figs. in text. 1919. Bucarest. Inst. d'Arts Graphiques. Charles Göbl, S-sseur J. St. Rasidesco, 16, rue Paris, 16. [Price not stated.]

This work is essentially a thesis on typhus fever, based on the detailed study from both clinical and laboratory standpoints of some 600 cases under observation during the epidemic of 1917–18 in the northern part of Roumania. As commonly happens in extensive epidemics, many of the cases were of a specially virulent type, and it is to this that the author attributes the fact that certain characters of the cerebro-spinal fluid and blood, which he describes, have either not been recorded before, or have been met with as rare phenomena in previous smaller epidemics.

The cerebro-spinal fluid was examined in 210 cases, and was found to be always raised in tension, though to a less degree than in meningitis. In the milder cases the fluid was usually clear and the cell-content under 30 per cmm. In the early stages the cells were lymphocytes only; in the course of the second week, or earlier in severe cases, large mononuclear cells were found, with excentric nucleus, some of which showed a marked basophil reaction of the non-granular protoplasm. It was noted that the earlier the appearance of these basophil mononuclears the worse was the prognosis. Another grave sign was a yellow coloration of the fluid; this was present in 58 of the 210 cases, and when deep and persisting after the fall of temperature, the sign was found to possess an almost uniformly fatal significance.

The blood examination showed an occasional early leucopenic phase, followed in the great majority of cases by a well-marked leucocytosis. In the differential count the author rightly insists on the importance of an absolute count, whereby the number of each variety of leucocyte per cmm. is determined. Such a count shows that, though both polymorphonuclear and mononuclear cells are increased, the increase in mononuclears is the more constant and the more marked of the two. A common experience was to find a slight transitory polymorphonuclear leucocytosis replaced during the second week by a more intense and lasting mononuclear increase. The mononuclear cells consisted principally of abnormal forms, some of which were large ovoid cells, with excentric nucleus, and clear basophil protoplasm, similar to the abnormal cells found in the bone marrow, while others were even larger cells, with abundant clear protoplasm, but not basophil. Lymphocytes of normal type were not greatly increased, nor were myelocytes present in the blood. A point to which great importance is

attached is that the higher grades of leucocytosis were limited to the cases of severe illness with toxic manifestations, so that the prognostic value of the sign came to be regarded in the reverse sense of that which holds for most acute infective processes: thus in 38 cases with a leucocytosis over 20,000, 35 died, giving a mortality of 92 per cent.; in 15 cases with a leucocytosis of 30,000 or over, not one recovered.

A constant feature of all but the mildest cases was found to be a fall of the systolic blood pressure: in 63·6 per cent. of a series of 84 cases in which daily records were taken, the maximum pressure fell to a point between 80 and 90 at some time during the febrile period. The blood pressure curve varied according to the severity of the disease: in cases with marked toxaemia the pressure began to fall during the first few days and remained low or even continued to diminish during the post-febrile phase; in cases of less severity the initial fall was postponed, the minimal point to which tension fell was higher, and some recovery of tension was noted even before the febrile period had come to an end, followed by a marked rise during the early days of apyrexia. The loss of arterial tension is attributed by the author partly to the paralysing effect of toxins on the peripheral vasomotor mechanism, partly to a state of adrenal insufficiency, consequent on degenerative changes in the adrenal glands.

In discussing the general symptomatology of the disease, the author lays stress on the importance of the part played by toxaemia in the more severe forms, and draws special attention to the group of cases in which, after the fall of temperature, the patient remains in a very grave state, with rapid and feeble pulse, low arterial tension, cold and cyanosed extremities, and pronounced nervous symptoms. For this state of profound intoxication he has devised a method of treatment whereby he claims that the toxins are destroyed through the effect of chlorine dissolved in saline solution. The solution consists of 0·40 or 0·50 cgm. chlorine dissolved in 1,000 cc. of hypotonic saline solution (sodium chloride 6·5 per mille); of this 500 cc. are injected intravenously once or twice daily until manifest improvement is produced; as a rule two daily injections are required for a period of one to three days, after which a single daily injection is sufficient. Figures are quoted which indicate remarkable results from this line of treatment, even in apparently desperate cases: thus in a series of cases, all with a leucocytosis above 30,000, of 15 cases not treated, all died; of 17 cases treated, one only died. Again, in the case of patients over 40 with toxaemic symptoms, a type in which treatment had previously seldom been of avail, in 26 cases treated by the author's method only two died, and in one of these death was due not to toxaemia, but to an associated streptococcal septicaemia. It may be asked how far these good results are due more to the fluid than to the antitoxic agent dissolved in it, and it would be interesting to compare the author's results with a series of cases treated with repeated injections of normal saline, thus diluting without attempting to destroy the toxins—a procedure which was sometimes attended with remarkable success in apparently hopeless cases of typhus among the British troops during the occupation of the Caucasus in 1919.

In the treatment of myocardial failure, strophanthin (Merck's crystalline) in doses of 0·25 mgm., given two or three times daily was found effective; preparations of digitalin were also tried, but with disappointing results.

As the record of an exceptional opportunity for observing the manifold aspects of typhus in epidemic form, this book is well worth perusal; the author has the gift not merely of describing symptoms in aggregate, but of drawing a clinical picture; and if in the more theoretical sections the views he advances appear at times to be somewhat speculative, they at least stimulate reflection, and lose nothing in force from the moderate and persuasive way in which they are presented. The fault of the book is redundancy; there is much needless repetition, the same ground being traversed repeatedly, often in almost identical phraseology, in the various sections.

In the chapter on diagnosis no mention is made of the Weil-Felix reaction, the value of which in the diagnosis of doubtful cases has been clearly established.

A. G. Phear.

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CREMONESE (Guido). Der Mechanismus des Malariafiebers.—*Ztschr. f. Hyg. u. Infektionskr.* 1921. Vol. 92. No. 3. pp. 475–484.

DUCAS (Robert). L'Immunité dans la Trichinose.—47 pp. 1921. Paris: Jouve & Cie, 15, Rue Racine.

DESCHIENS (Robert). Les Entérites à *Giardia* (*Lamblia*).—83 pp. With 3 plates. 1921. Paris: Imprimerie Jehlen.

FINDLAY (G. Marshall). The Blood and Blood-Vessels in Guinea-Pig Scurvy.—*Jl. Path. & Bact.* 1921. Vol. 24. pp. 446–453.

——. A Note on the Experimental Scurvy in the Rabbit, and on the Effects of Ante-Natal Nutrition.—*Jl. Path. & Bact.* 1921. Vol. 24. pp. 454–455.

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HOFFMAN (W. H.). El Dianóstico de la Viruela por la Inoculación de la Cornea del Conejo.—*Crónica Med.-Quirurgica de la Habana.* 1921. Sept. 10 pp.

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Reprints and Pamphlets Received—*cont.*

PARKER (R. R.). The Present Status of the Control of *Dermacentor venustus* Banks in the Bitter Root Valley, Mont., and New Data concerning Habits of the Tick.—*Jl. Econom. Entom.* 1920. Vol. 13. pp. 31–37.

—. The Control of Rocky Mountain Spotted Fever in the Bitter Root Valley. A Statement for the Information of Persons residing in the Infected Areas.—20 pp. The Montana State Board of Entomology. 1921. Mar. Circular 1, Revised.

Note.—On direct application (not through agents or booksellers) any of the foregoing reprints or pamphlets will be sent on loan to any part of the world, the Bureau paying outward postage.

BOOKS AND REPORTS RECEIVED.

CAULLERY (Maurice). Le Parasitisme et la Symbiose.—pp. 400+viii+xii. With 53 text figs. Paris : Librairie Octave Doin. [Price 14 francs.]

DOBELL (Clifford) & O'CONNOR (F. W.). The Intestinal Protozoa of Man. —pp. ix+211. With 8 coloured plates. 1921. London : Published for the Medical Research Council by Bale, Sons & Danielsson, Ltd. [Price 15*s.* net.]

MUIR (Ernest). [M.D., F.R.S. (Ed.).] Handbook on Leprosy. Its Diagnosis, Treatment and Prevention.—pp. iv+118. With 2 coloured plates and 56 figs. 1921. Cuttack : Published by R. J. Grundy. [Price 7*s.*]

ROCKEFELLER INSTITUTE. Studies from the Rockefeller Institute for Medical Research.—Reprints Vol. 36. pp. vi+599. With 25 plates and 45 text figs. 1921. New York : Rockefeller Institute for Medical Research.

ROGERS (Leonard). [C.I.E., M.D., F.R.C.P., F.R.S., I.M.S. (Retd.)]. Bowel Diseases in the Tropics, Cholera, Dysenteries, Liver Abscess and Sprue.—pp. xvi+475. With 16 figs, 50 tables, 10 plates, 2 charts and 3 diagrams. 1921. London : Oxford Medical Publications. Henry Frowde and Hodder & Stoughton. [Price 30*s.* net.]

SWELLENGREBEL (N. H.). De Anophelinen van Nederlandsch Oost-Indië.— *Kolonial Instituut te Amsterdam. Mededeeling No. 15. Afdeeling Tropische Hygiene No. 10.* pp. x+155. With 76 text figs. and 20 plates.

VAUGHAN (Warren T.). [M.D.]. Influenza : An Epidemiologic Study.— *Amer. Jl. Hyg.* Baltimore Monographic Series. 1921. July. No. 1. 260 pp. With 29 charts and 7 text figs.

MAURITIUS. Report on the Sanitation of Beau Bassin, Rose Hill, Quatre Bornes, Phoenix, Vacoas and Curepipe. [By BALFOUR (Andrew), C.B., C.M.G., M.D., Director-in-Chief of the Wellcome Bureau of Scientific Research, London.]—pp. ii+38. With 1 plan. Printed by authority of His Excellency the Governor. Mauritius : P. G. Bumstead, Acting Government Printer.

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